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Compounding Latex

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THE following is a continuation of the timely and enlightening information on United States patents relating to the compounding of latex, from our June 1, 1932, issue.

27. Sheppard and Eberlin, 1,589,330, June 15, 1926. An emulsion is prepared which is used for electrodepositing a rubber composition. It consists of 4,000 parts of a 30% rubber latex, 1,000 parts of the sulphur emulsion, 1,000 parts of the cellulosic compound emulsion, 1,000 parts of the diphenyl guanidine emulsion, 3,000 parts of the carbon black emulsion, 500 parts of the nigrosine emulsion, and 1,000 parts of the zinc oxide emulsion. Rubber latex having about 30% rubber and stabilized by ammonia is used. The sulphur emulsion is prepared by mixing 20% of flowers of sulphur into a 0.5% solution of glue in water. The mixture is then agitated in a high speed colloid mill.

The emulsion of one or more cellulosic compounds is prepared as follows: 50 parts of cellulose nitrate are dissolved in 150 parts of amyl acetate. One part of a protective colloid, such as glue or gum arabic, is mixed, along with 15 parts of an emulgent like Turkey red oil, in 1,000 parts of water. The solution of cellulose nitrate in amyl acetate is then thoroughly mixed into the aqueous bath. Finally the mixture is homogenized in colloid mills. Instead of nitrocellulose there may be used 50 parts of chloroform-soluble acetate dissolved in 150 parts of chloroform or 50 parts of acetone-soluble cellulose acetate dissolved in 150 parts of acetylene tetrachloride. In the case of cellulose ethers, such as water-insoluble ethyl cellulose, 50 parts are dissolved in 150 parts of a mixture of equal weights of benzol and ethyl alcohol. Such solutions are stirred into the aqueous bath, containing the colloid and the emulgent, and then homogenized in the same way that the solution of nitrocellulose was treated. An emulsion containing nitrocellulose and acetyl cellulose can be prepared by dissolving 25 parts of one and 25 parts of the other together in 150 parts of acetone and then proceeding as above described.

The above described emulsions of unvulcanized rubber, sulphur, and cellulosic compound, are then mixed together, and the mixture finally homogenized by running it through a colloid mill. A low-speed paint mill is satisfactory.

Details of depositing the rubber by means of the electric current are given in patent No. 1,589,332, June 15, 1926.

28. Sheppard and Eberlin, 1,589,331, June 15, 1926. An emulsion suitable for electrodeposition of rubber is prepared from latex to which dispersed sulphur is added. 1,000 cc. of sulphur emulsion are added to 4,000 cc. of rubber latex having about 30% concentration of rubber. The latex should be sufficiently alkaline to prevent coagulation, or the sulphur solution may be made slightly alkaline with ammonia before it is stirred into the latex.

The protective colloid is worked into the rubber emulsion by adding one or more pigments. Thus 4% carbon black is mixed in an aqueous solution containing ½ of 1% of colloid such as glue, the mixture being homogenized in a colloid mill. For example, 3,000 parts by volume of the carbon black colloid emulsion are added to 4,000 parts of the 30% rubber latex. Where a white pigment is desired, 20% of zinc oxide is mixed in a ½% solution of glue and homogenized to get a stable emulsion which is then incorporated with the latex. Similarly, nigrosine can be emulsified with a colloid and added.

The method is also applicable to incorporating diphenyl guanidine as an accelerator of vulcanization. Thus an 8% suspension of this substance in water is prepared and mixed with the latex, in the proportion of 1,000 parts by volume of the former to 4,000 parts of the latex.

29. Cutler, 1,591,018, July 6, 1926. Granulated cork is mixed with latex. The mixture is placed in suitable molds and subjected to 2,000 pounds' pressure per square inch.

30. Loomis and Stump, 1,599,282, Sept. 7, 1926. Formaldehyde, tannic acid, salts of the alkaline earths, or salts of the heavy tri-valent metals is added to latex partially to coagulate it into a paste suitable for spreading or frictioning. Protective colloids as gelatine, casein, agar agar, etc., may be incorporated in the latex to insure against premature conversion of the material into rubber.

31. Russell and Broomfield, 1,601,772, Oct. 5, 1926. This process produces a solid, spongy, non-adhesive material suitable as an ingredient in rubber mixings. Heated rubber latex and a heated aqueous solution of glue or gelatine are mixed, and both coagulated. Latex and the glue solution are each heated to about 90° C., mixed, and then raised to about 100° C., after which are added the coagulants, formaldehyde, and acetic acid. The former serves to coagulate the glue while the latter serves to coagulate the latex. The product obtained is solid, insoluble in water, and can be immediately ground and packed; moreover it is not affected by dampness and does not become sticky.

32. Biddle, 1,607,585, Nov. 16, 1926. Casein is added to latex as follows: 100 parts casein, 10 to 30 parts lime, and 2 to 15 parts sodium fluoride, and from 200 to 300 parts water are mechanically mixed and allowed to dissolve and then added to 500 parts latex, which results in the formation of a homogeneous creamy mass that is precipitated by adding from 2 to 10 parts sulphuric acid. This composition is suitable for molding, coatings, and sealing.

33. Biddle, Reissue 16,476, Nov. 16, 1926. (Original No. 1,437,487.) A waterproofing composition contains in proportions by weight, casein 100 parts, lime 25 parts, sodium fluoride 8 parts, water 350 parts, and latex 300 parts. The casein, lime, and sodium fluoride are first dissolved in the water and then added to the latex.

34. Biddle, Reissue 16,477, Nov. 16, 1926. (Original No. 1,437,487.) A sealing composition in proportions contains by weight, casein 100 parts, ammonium hydrate 15 parts, linseed oil 300 parts, latex 500 parts, water 350 parts, and filling material as desired. First dissolve the casein in the ammonium hydrate and water and then add the latex to the resulting solution; the filling material and the linseed oil, which acts in part as a softener, are added last.

35. Cohen, 1,610,226, Dec. 14, 1926. The essential feature is mixing latex with very finely divided carbon in a dilute solution of an alkaline fatty acid. The latex is diluted with pure water, which should contain as little lime as possible, and filtered through cloth or gauze. A dispersion or suspension of colloidal carbon is made by combining well purified carbon with a dilute solution of an ammoniacal or other alkaline fatty acid. The whole is intimately mixed and heated to 50° C., after which the diluted latex is added slowly to it. The temperature, raised to about 70° C., is maintained with continuous agitation for a considerable time. If chemicals such as ammonia were originally added for preserving the latex, the elevated temperature should be maintained until the ammonia or other preservative has been distilled off. This mix is coagulated by means of a solution of alum.

36. Lefebure, 1,610,864, Dec. 14, 1926. Latex and cement are compounded as follows: 100 parts by weight of Portland cement are gaged with water to the consistency of a thick paste; from 20/25 parts of water are suitable for this purpose. Sufficient latex is then taken to contain 2 parts by weight of rubber content. To this latex is added sufficient of a dilute solution of alum with stirring, to finely coagulate the rubber.

Where the rubber concrete is required for the subsequent manufacture of the vulcanized rubber concrete, the accelerator and the sulphur (and any other filler) are intimately mixed with the Portland cement prior to gaging with water. Suitable quantities of sulphur and accelerator for the example above are: sulphur 1/10-part by weight; accelerator, 1/50-part by weight.

37. Petersen, 1,611,278, Dec. 21, 1926. One part by weight of carbon black with about 5 parts of water is first thoroughly dispersed, then added to such quantity of rubber latex that the resulting coagulum will contain 2 parts by weight of coagulated rubber to one part of carbon black. The mix of dispersed carbon black with latex is then agitated in a moderate manner, with or without superheating, until the mass coagulates. A specific mix, based on the use of latex containing 34½% of solid matter, is carbon black, 125 gr.; water, 625 gr.; and latex, 725 gr.

38. Hopkinson, 1,611,349, Dec. 21, 1926. As a specific example of the invention, the following ingredients are mixed: rubber latex equivalent to 100 parts dry rubber, 10 parts zinc oxide, 8 parts sulphur, and 2 parts glue. The latex is emulsified with the glue, and the zinc oxide and sulphur added previously wetted or not as desired. Clay or other materials may be added in suitable quantities. After the compounding ingredients are added to the latex and while coagulation is in progress, the mass may be put into an enclosed mixer and thoroughly mixed to preserve the homogeneity of the mixture. The mass is evaporated, preserving all of the solid constituents of the latex and vulcanized at 60 pounds' steam pressure for approximately 1 hour when vulcanization is complete. The drying in the mixer is carried on until the mass is granular and may be readily handled. The following compounding ingredients may be used:

Mineral fillers including pigments: zinc oxide, carbon black, lamp black, whiting, iron oxide, chrome green, ultramarine blue, lithophone, clays, etc.

Accelerating and vulcanizing ingredients: organic and inorganic vulcanizing materials including sulphur, organic and inorganic sulphur containing compounds, including thiol salts, organic disulphide and monosulphides, condensation products of aldehydes and amines, oxygen containing organic compounds and amines, etc.

Softening agents including oils, fats, waxes, and tars: coal tar naphtha, paraffin, non-volatile petroleum distillates, petrolatum, etc.

Organic fillers other than softening agents: glue, casein, rubber cement, vulcanized rubber scrap, reclaimed vulcanized rubber, wood flour, ground rags, paper, wood pulp, etc.

39. Acheson, 1,623,517, Apr. 5, 1927. Fillers such as clay, gas black, or zinc oxide are mechanically worked in the form of a heavy paste in conjunction with certain organic bodies such as tannin, extracts from roasted cereals, or other organic bodies having like properties and known as "deflocculating agents." The operation is facilitated by adding ammonia or amino bodies such as hexamethylenetetramine. The paste is diluted by pure water until it carries about 10% of clay or other filler in suspension and is then run through a thickener or other classifying device to remove grit and coarse particles. There is then uniformly admixed sufficient fluid rubber latex to provide the desired proportions between the filler and the rubber components of the mixture, which is thoroughly agitated. It should be allowed to stand for some hours to permit blending. Hydrochloric acid is then added in proportion to impart a distinct acidity to the mass, and the mixture is thoroughly agitated. Upon standing the filler undergoes flocculation and the rubber coagulates, the 2 separating, where the blending has been properly performed, in the most intimate association.

40. Bent, 1,623,522, Apr. 5, 1927. A coating composition results from the following mixtures: A. One thousand pounds of barium sulphate pigment, known as blanc fixe or barytes, in paste form, containing about 25% of water are mixed with 25 gallons of water. B. Fifty pounds of gelatin are dissolved in 30 gallons of water. Five hundred pounds of the A compound are mixed with the whole of the B mixture, and 2.6 pints of a saturated solution of alum are slowly stirred into the composition. Finally rubber latex containing 35 to 40% of non-volatile constituents (mostly rubber) is added in the proportion of half a gallon of latex to each 640 pounds of the mixture, which is applied to the surface of the paper to be treated by brushing or dipping or any other well known paper coating system.

41. Zimmerli and Bibb, 1,626,493, Apr. 26, 1927. A surgical dressing adhesive consists of a heat sterilized rubber latex emulsion stabilized by ammonia. The latex is sterilized by heating to 100° C. for an hour for each of 3 consecutive days.

42. Dewey, 1,627,278, May 3, 1927. A colloidal suspension of bentonite in water is prepared by adding the bentonite to water with continuous agitation. The colloidal gel thus prepared is thoroughly mixed with the desired quantity of rubber latex. The relative proportions of the ingredients are such that the latex particles, ultimately depended on for adhesive purposes, are dispersed through a predominant quantity of bentonite, which, when dry, is not at all adhesive. For a paste-like consistency the following is satisfactory: 18 pounds bentonite, 100 pounds water, 10 pounds of 35% rubber latex emulsion. The composition thus produced is suitable as an adhesive between smooth surfaces such as metals, glass finished wood, and the like, as well as paper, smooth finished cloth, leather, etc. Consequently it finds an extensive and peculiarly appropriate application in fixing labels and the like to metal and glass surfaces.

Should it be desirable to add a preservative to the adhesive composition, the following formula is effective: ½ fluid ounce chloroform, 5 fluid ounces toluol, 5 fluid ounces oil of cloves. The latter serves as a masking odor though it possesses preservative qualities also.

43. McGavack, 1,629,924, May 24, 1927. A composition for casting rubber articles of irregular shape follows: A water emulsion of pine tar is first made with any suitable protective colloid. For instance, 100 parts pine tar, 100 parts water, 10 parts glue, and 1 part of sodium oleate are emulsified. To form the emulsion the glue and the oleate are dissolved in water and then emulsified with tar. This emulsion will remain stable for practically an indefinite time, and it increases in its gelling properties upon keeping. If a normal latex is used containing about 33% solids, from 30 to 40 parts of the pine tar emulsion are added to sufficient latex to form 100 parts of rubber. After adding the pine tar, the latex is stirred until an intimate mixing results, and the mixture is then poured into a mold of the desired shape and allowed to stand. With the above mixture gelling occurs in approximately from 1 to 2 hours. The molded object is then either partially dried in the mold or removed therefrom and placed in a position such that it may dry at room temperature or a little above, for instance, from 2 to 15 hours, depending upon the thickness of the object. After this drying the balance of the moisture in the article may be driven off by heating at a higher temperature. If the temperature is elevated too much in the initial stages, blowing of the rubber tends to occur.

If desired, ingredients for curing at low or elevated temperatures may also be introduced; and if so, such ingredients are added prior to the addition of the gelling agent. An excellent curing mixture may be obtained by using 3.5 parts sulphur, 5 parts zinc dimethyl-dithiocarbamate, 1 part zinc oxide, and 1 part glue for every hundred parts of rubber used.

44. Harris, 1,631,265, June 7, 1927. An adhesive comprises bentonite, silicate of soda, water, and 2% to 25% of rubber latex.

45. Hopkinson and Gibbons, 1,632,759, June 14, 1927. Latex containing 30 to 35% solids is treated with a solution of calcium polysulphide to give 0.34-part by weight of solid calcium polysulphide per 100 parts by weight of latex. If a porous form be dipped into this treated latex for 5 minutes and allowed to dry, the actual weight of rubber deposited will be approximately twice as much as the deposit formed in the same time without calcium polysulphide. If desired, the latex may be mixed with compounding ingredients with or without vulcanizing combinations, and the latex may or may not be vulcanized prior to the washing treatment. As an example of a vulcanized latex, the following may be employed:

	Parts
Preserved latex containing 35% of rubber	100
Zinc oxide, XX brand	2
Precipitated sulphur	2
Oxy normal butyl thiocarbonic acid disulphide (from an emulsion)	1
Dibenzylamine (from an emulsion)	½
Glue (from an emulsion) also added separately	2½
Solvent naphtha (from an emulsion)	3

This latex will vulcanize upon standing one or 2 weeks, and the vulcanized latex may be placed into a container in which is fitted a filtering medium such as the single ply fire hose fabric. The filtration may be accelerated by the use of a stirrer set at a slight distance from the filtering disk. The serum runs clear after a minute or 2, and the rubber remains in the container. Additional water may be added, and the process carried out as a continuous or discontinuous filtration until the filtrate shows substantially no water soluble material. With the above vulcanized latex, filtered under 20 pounds' pressure, the serum or filtrate comes through at 2 different rates, the faster rate being observed until the rubber on the upper side of the filtering disk comes into contact with the stirring apparatus. After this contact takes place, the rate of filtration remains approximately constant. With a stirrer set at 0.019-inch from the filtering disk, the above vulcanized latex is filtered at the rate of 12.24 gallons per square foot of filtering surface per 24 hours. This rate is the constant rate obtained after the rubber on the filtering disk had accumulated to a thickness of 0.019-inch, that is until it had reached the stirrer.

The example of vulcanized latex given will deposit a film 0.042-inch thick in 5 minutes, as compared with 0.003 for ordinary preserved latex in the same time. A mixture of 150 cc. of approximately 35% latex and 8.5 grams of a 3.4% Irish moss gel will give a film approximately 0.010-inch thick in 5 minutes, immediately after preparation. After standing overnight the same mixture will give in the same length of time a deposit of 0.020-inch. Certain compounding ingredients exert a similar effect upon the filterability. It appears that the rubber and the filter are deposited upon a porous form in approximately the same proportions in which they are found in the mixture. A mixture containing 100 parts by weight of rubber as latex, 100 of gilders whiting, 50 of water, will give a dry film 0.009-inch thick after a 5-minute dip. A mixture of 100 parts by weight of rubber as latex, 100 gilders whiting, 50 mineral flour, and 100 water will give a dry film 0.014-inch thick after a 5-minute dip. A composition containing 100 of rubber as latex, 100 gilders whiting, 100 mineral flour, and 150 water will give a dry film 0.020-inch thick after a 5-minute dip.

From these 3 examples it can readily be seen that the mineral flour has acted to increase the filterability of the compositions, as evidenced by the increased speed of deposit upon the porous form.

The product obtained from all of the above treatment is in an uncoagulated state and contains practically no water-soluble non-rubber constituents and at the same time has all the strength of an unmilled rubber in much the same form as it occurred in the original latex. The product, when dried, is practically transparent, that is in cases where no compounding ingredients have been added prior to the washing.

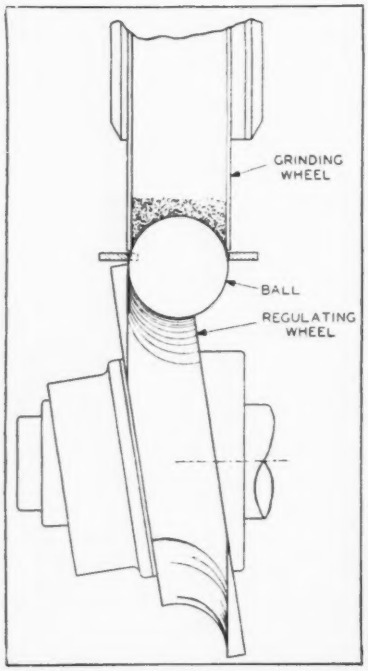
The washed rubber particles, dispersed in water, may be employed for any dipping, spreading, or coating operation, or the dispersion may be compounded after the washing treatment to give a compound latex, a vulcanized latex, or a vulcanizable latex composition which may be used in substantially the same manner as a similar latex composition made with unwashed latex.

(To be continued.)

Centerless Grinding

Hard Rubber Balls

C. M. Reesey [1]



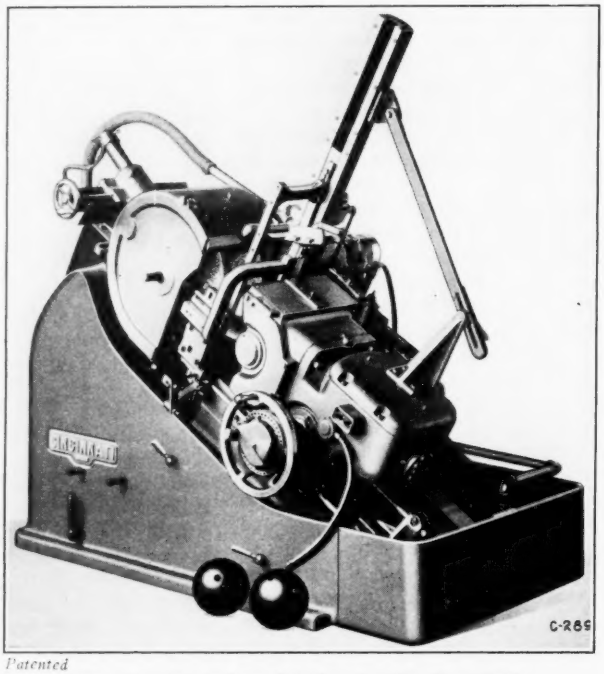
Patented

Fig. 1. Method of Truing Wheels for Spherical Grinding

THE centerless method of grinding has so greatly increased the production and improved the accuracy on many regular grinding jobs that these advantages are being utilized by manufacturers of non-metallic parts including hard rubber materials which require finishing at a high production rate. A typical list of these rubber parts includes a 5-inch duckpin ball, tubing, pencil barrel, bed casters, washers, disks, rods, and smoking pipes of which the stem is ground. The fact that a great many of these parts are articles with which we daily come in contact makes this method of grinding of unusual interest to production men in charge of finishing operations.

One of the latest developments in the field of centerless grinding is finishing spherical work such as bowling, duckpin, and regular hard rubber balls from 13/16-inch up to 9-inch diameter. This method of grinding balls is a generating process that produces true spheres which can be held to very close limits of size and accuracy with a very good finish.

The fundamental principles which apply to all centerless grinding operations are used although the regulating wheel is arranged in a somewhat different manner as illustrated in Figure 1. In order to produce a true sphere the work must have a continually changing axis of rotation. This is accomplished by means of a special regulating collet on which the wheel is mounted at an angle to the axis of the regulating wheel spindle. The contact of the wheel with the work, when so mounted, imparts a continually changing axis of rotation to the sphere and presents a continually changing surface to the fixed radii of the wheels.



Patented

Fig. 2. Centerless Grinder for Bowling Balls

Bowling balls are finished as illustrated in Figure 2, an operation formerly done by sanding polishing. The productivity and the economies effected by the centerless method of grinding make this new adaptation far superior to the old method. These balls, approximately 8½ inches in diameter, come to the centerless grinder after being turned. Balls are loaded singly in the hydraulic loading attachment which lowers each ball between the grinding and regulating wheels. Both wheels are grooved by the radius truing attachment. The infeed slide carrying the work, work rest, and the regulating wheel is moved toward the grooved grinding wheel. As the work comes into contact with the grinding wheel, a true sphere is generated on the ball since the regulating wheel is mounted on a collet at an angle of approximately 12° to 20° to the axis of the regulating wheel spindle. This produces a constantly varying inclination of the regulating wheel relative to the grinding wheel axis. After cleaning up the work, the infeed slide is backed away, and the hydraulic attachment raises the ball for convenient removal from the machine. Approximately 0.010- to 0.015-inch stock is removed from the diameter, and a net production of 25 to 30 completely finished balls per hour is obtained.

[1] In charge of publicity, Cincinnati Grinders, Inc., Cincinnati, O.

Business Is Looking Up

Constructive measures fraught with potentialities for general business expansion are making more progress each week, and are contributing to buoying sentiment. Hesitancy is less in evidence in some directions, and further confidence has been contributed by the maintenance of improvement in the banking situation and the continued betterment of credit conditions. *Dun's Review.*

Rubber Molding

Preparation of Molding Blanks—Volumetric vs. Weight Basis—Mold Lubricants, Care, and Storage—Small Molded Article Production Illustrated by Heel Manufacture

Webster Norris

THE plastic quality of rubber mixings readily permits shaping the products by pressure in molds and vulcanizing them in finished form. Success with rubber molding requires that heed be given to the essentials of plan, construction, and operation of the molds, preparation of blanks, and the requirements peculiar to many items of molded rubber manufacture. Reference is made in the following paragraphs of the more important precautions of general application.

Blanks for Molding

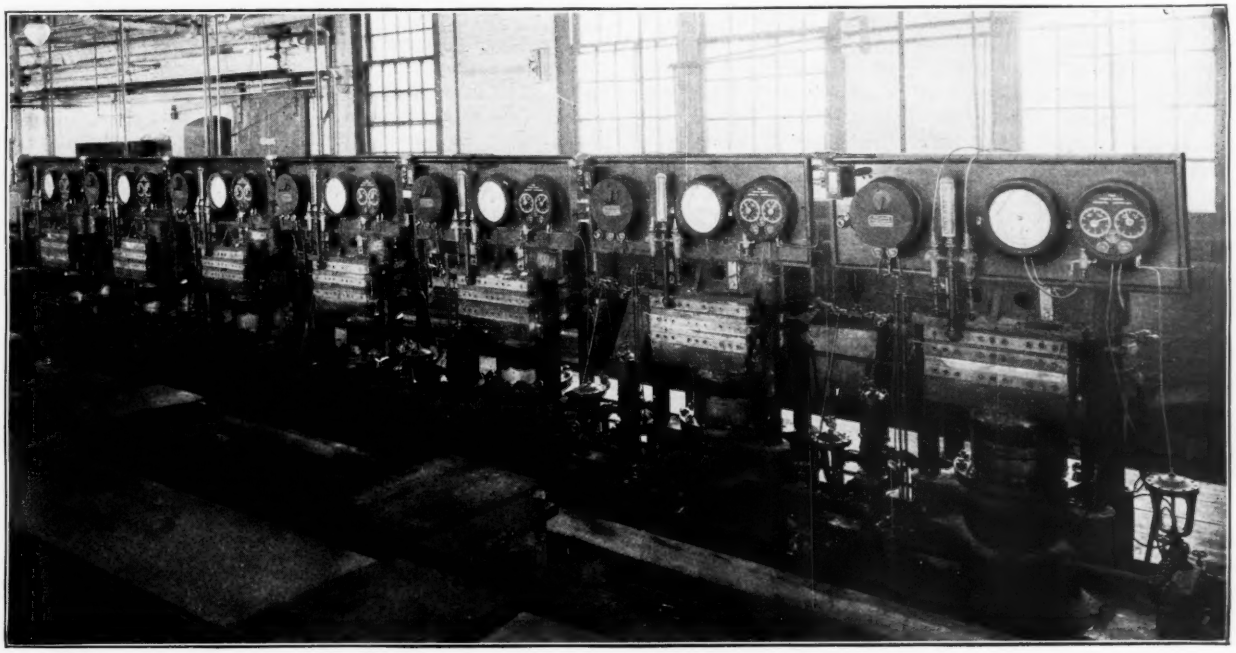
Rubber blanks for molding should closely approximate the mold cavity in volume and shape in order to produce a well-molded piece with minimum waste. This provision requires abandonment of the practice of cutting blanks to weight with scant regard to the shape of the cavity and none whatever to the specific gravity of stocks. Under such practice much poor work and excessive waste were inevitable. Molds were overfilled or underfilled, and trapped air blemishes were scarcely recognized as defects.

A common misconception in the press room was that given full weight in a mold blank, in an ordinary disk valve for example, the molding pressure would redistribute the material to fill the cavity even if the blank was trimmed very unevenly. This does not apply to blanks of firm stock that are badly trimmed because the excess stock at any given point escapes from the cavity at that point and fails to flow and fill deficiencies elsewhere in the blank.

The correct procedure in mold work is to prepare the blank to match the shape and the volume of the blank to those of the cavity. That is the practice in molding tire casings than which there is no rubber molding more particular and none better executed because the fully constructed tire is cold pressed in a mold to insure a perfect fit without excess of stock.

Plain rubber blanks are usually die cut in the case of flat stock or extruded and cross cut into sections in the case of a great variety of molded shapes that are adaptable to this method of profiling their cross sections. In fact extrusion is superseding molding for production of many rubber items notably such as are used in the construction of automobiles particularly strips, bumpers, etc., for car bodies. Such pieces extruded in strips to exact dimensions of cross section are cured in open steam and then sectioned in lengths to suit.

Composite blanks constructed from calendered sheet and frictioned fabrics for diaphragms and similar molded goods are frequently constructed by hand. Protection of the fabric in service requires that its edges be wholly enclosed by



Modern Press-Room for Small Rubber Articles

rubber. Blanks of this construction should conform closely to mold cavity volume in size and shape for the prevention of wrinkles, folds, or displacement of the fabric that would expose its edges in the molded article. Fabric distortions and displacements are certain to reduce seriously the serviceability of the goods.

Volume vs. Weight

A method of preparing rubber molding blanks, less in use now than formerly, was to cut them with regard more to their weight than to the volume capacity of the mold cavity. This method resulted frequently in causing faulty molding and much unwarranted waste. Each pressman trimmed the blanks to overweigh the finished article with slight attempt to distribute the trim uniformly around the blank. His assumption was that compression in the mold would equalize the distribution of the stock to fill the cavity. This assumption frequently proves unsafe especially when the trim is mostly upon one edge. The molded pieces are often incomplete because the excess of stock in one place does not flow far to supply the deficiency of stock trimmed away from the blank but is squeezed out of the cavity as overflow.

Blanks are dusted before being molded. The object is to prevent the adherence on their surfaces of stray bits of loose material that may accidentally come into contact with them. Talc dust is most commonly used for this purpose. Sericite is a somewhat fibrous micaceous natural mineral which because of its irregular crystalline structure, when powdered, tends to be absorbed more readily into rubber than flat scaly material like mica. Yet this material resists absorption by the rubber sufficiently long to be of value in facilitating the escape of trapped air in molding.

Experience proves that the correct way to make well-molded articles free from deficiencies, distortion, and excessive waste is to conform the mold blanks as closely as practicable in size and shape to the volume capacity of the cavity. The weight is then properly distributed, and satisfactory molding is inevitable.

Mold Lubricants

Lubricants are necessary to make the cured articles easily removable from the molds. A soap solution in water is the original and common lubricant. It is applied by brush to the hot mold cavities and renewed at each filling of the mold. This cheap and ready method is used extensively in molding many small articles because of its convenience. Usually no attempt is made to control the amount of soap applied; consequently light colored goods are frequently so stained as to require cleaning by washing.

A variety of other lubricants, some of which contain soap, can be prepared in the press room. One of these that is well suited for general molded articles, except those in white or light colors, is made of specially prepared water soluble sodium sulphonate sold under the trade name Dipex. Six or 8 ounces of this material are dissolved in a gallon of water and applied by brush to the hot molds. The strength of this solution may be varied to suit particular cases. This material finds very favorable acceptance by pressmen making the common run of dark or uncolored goods such as heels.

A wash that gives a satisfactory finish contains both soap and Dipex. The proportions of the ingredients are measured by volume, and the solution made by boiling.

Sugar	4 pints
Dipex	1 pint
Soap chips	1 pint
Water	50 gallons

For Non-Blooming Black Stocks. Dissolve 5 toilet-size cakes of Ivory soap by boiling in 1 gallon of water for 15 minutes.

For Colored Stocks. Dissolve 5 pounds of Rusco mold paste in 25 gallons of water.

For Blooming Stocks. Dissolve 5 toilet-size cakes of Ivory soap and ½-pound of chemically pure glycerine by boiling in 1 gallon of water for 15 minutes.

General Utility Mold Spray. In 12 quarts of water boil for 5 minutes 2 ounces of soap bark chips, 2 ounces sugar, 1 ounce Dipex, and 2 fluid ounces of soap. This may be applied by spraying with 70-pound air pressure.

White Stock Mold Wash. Boil 2 ounces each of soap bark chips and sugar in 12 gallons of water for 5 minutes.

Mold Cleaning Solutions

Thorough cleaning of mold cavities should be done at stated intervals that engraved surfaces, trade marks, and lettering will clearly appear on the molded goods.

When molds become very dirty by the accumulation of scale made up of sulphur, talc, and residue from the mold wash, they can be thoroughly cleaned by the use of either of the following solutions. (1) The molds are boiled for 24 hours in a solution of 5 pounds of caustic soda in 10 gallons of water. Then rinse thoroughly in clean water and dry. (2) Another cleaning solution is composed of 1,800 cc. of water, 330 cc. of hydrochloric acid, and 30 cc. of formaldehyde. This is applied to the mold cavities by a scrubbing brush. The cleaned surfaces are thoroughly washed with clean water and wiped and dusted with powdered lime to absorb traces of moisture. If the mold is to be stored, the lime should be removed and the cavities coated with petrolatum to prevent injury by rusting.

Storing and Cataloging Molds

Every mold should be numbered and its parts assembled when stored. It is well to arrange them systematically on shelves in a space set apart for safe storage. In case they are numerous it is well to catalog them by serial number and types, listing also number, sizes, or dimensions of cavities, ownership of mold, and any other data of identification. This matter is frequently neglected, and molds are scattered about wherever the pressman finds it convenient to place them. This haphazard method occasions much loss of time in searching for the molds when they are needed for production.

Rubber Heels

A rapid and economical system for producing small molded articles is outlined as operated by a well-known rubber company[1] in its manufacture of heels.

The stock is mixed on a Banbury and taken off a mill in slabs, which are dusted with talc and loaded on a platform holding 4,000 to 5,000 pounds. The stock is aged for at least 24 hours and is then taken to the finishing department. The first step in the actual manufacture of the heels begins at this point. The warmed stock is fed into a stripping mill, which delivers a continuous strip into an automatic dinker that cuts the blanks to an exact volume and weight so that the heel will fill the mold with a minimum of overflow. The specific gravity of each batch of stock is determined in order to get this weight and volume. The various weights for a given size of heel with the various specific gravities are charted so that the operator can set the dies for the exact volume of stock required to fill the cavity.

From the dinker, the biscuits fall into a soap bath from which they are delivered by an elevator conveyer onto a series of belts where they cool. These belts discharge the blanks into baskets, which are carried directly to the molder.

The pressman operates 5 molds, 4 in the press and one on the bench. A mold is pulled every 3¼ minutes, and the one on the bench must be prepared in this time. The preparatory work consists of opening the mold just drawn from the press,

(*Continued on page 50*)

[1]The Boston Woven Hose & Rubber Co., Cambridge, Mass.

Patentable Inventions

In the Rubber Industry

THE following is a continuation of the interesting and useful data on patenting inventions for the rubber industry, from the June 1, 1932, issue of INDIA RUBBER WORLD.

The Golf Ball Patent Suit (Cont'd)

"If it be said that the greater resiliency of the new ball, or of its core, is evoked under the light strokes as well as under the heavier strokes, it may also be said that upon the putting green this greater resiliency is not used for the purpose of obtaining distance which the physical force of the player could not attain with the older ball, whereas in the driving strokes the resiliency or other qualities of the ball effects a result that otherwise was not within the physical power of the player. In certain strokes he gets distance which he could not get with the old ball; in certain strokes he gets, with less expenditure of force, distance that he could get with the old ball; and in those strokes in which the player exerts but a slight amount of physical force, whether with the old or new ball, the new ball, like the old, may be made to putt steadily and accurately.

"We find no error in the conclusion of the District Court that the patentee's core and shell in combination produce a new mode of operation, and that the patent is not void as disclosing no patentable invention.

"The argument that the change from the former golf ball was obvious is of little force, in view of the lapse of half a century without the production of a ball having this special combination of elements. It does not seem on its face obvious that so large a gain in flight would result from combining a gutta percha shell and a core of rubber wound under high tension. The evidence from the defendant as to the difficulties of producing a thin shell of gutta percha that would withstand forcible blows, and of producing a rubber-wound core which should be a true sphere, tends to show that after the general conception of making a golf ball more resilient it was still necessary to determine what specific construction of core and shell was necessary, and whether a practical composite shell could be made, having such gain of flight as was of substantial importance, and which in other respects could compare favorably with a homogeneous and acceptable golf ball.

"We think it not safe to judge of the patentability of the ball by supposing it to be merely the embodiment of the general conception of giving greater resiliency by the use of rubber and thus making a livelier ball. The conception was much more specific than this, and comprehended a unitary structure that should not only be more resilient, but should meet the various requirements of the specific game for which the ball was devised.

"The record discloses by prior patents and other evidence that a number of attempts were made by other inventors to improve golf balls. No one of these inventors hit upon the successful means of doing so that are disclosed in the patent in suit."

The Balloon Tire Litigation

An illustration of the rule that mere change in size is not invention is illustrated by the Putnam patent No. 1,539,879 for the balloon tire. This patent was held invalid as not involving invention as well as being anticipated by prior use. (Steel Wheel Corp. v. Goodrich Rubber Co., 42 Fed. Rep. [2d] 406.) The following is the opinion given by the court:

"Prior to Putnam it was customary practice in this country to shoe automobiles with so-called high pressure tires of no larger cross-sectional area than would reasonably stand up under use at inflation pressures of from 40 to 85 pounds for passenger cars, and from 70 to 110 pounds for motor trucks, such tires increasing in diameter and inflation pressure with progressive increases of the load. These were built with stiff sidewalls of sufficient thickness to withstand the pressures to which they were to be inflated. The general principles were then well known to the engineers of the trade, however, that, as cross-sectional area was increased for a given load, inflation pressure might be decreased without injury to the tire; and that the only requirement as to sidewall thickness was that the sidewalls must have sufficient strength to withstand the internal pressure even when subjected to violent blows and jars. There was a 'standard practice,' or general recommendation, as to maximum load and corresponding air pressure for each size of tire, but no proved 'standard practice' as to air pressure for larger tires when used with much smaller loads, nor for the maximum size of tire permissible for a given load. Thus the 'standard practice' schedule fixes the maximum load per 5-inch cord tire at 1,700 pounds and the corresponding air pressure at 80 pounds, but is entirely silent as to recommended air pressure when a 5-inch cord tire is used for a load of but, say 850 pounds, or even less.

"Putnam's idea was based upon the known principle above stated, that, with an increase in cross-sectional area, inflation pressure for the same load might be lowered; and the also known fact that larger tires than were customarily used, inflated to a lower pressure than required for their maximum loads, produced easier riding qualities. The claims in suit are for a tire as an article or product of manufacture. As such, they must 'particularly point out and distinctly claim the part, improvement, or combination which he claims as his invention or discovery.' Rev. St. 4888 (35 USCA 33). The claims, when read in the light of the specification, are the definition of the scope of the patent. In them alone we must find the requisite novelty and utility; and, in an article patent, this novelty must reside in the article itself—in the combination of elements stated as making up the whole—and not merely in the standardized use of such article. Nor may we look to mere statements of function to supply omitted elements or disclose novelty where the article is used for the same old purpose. Such statements may be descriptive of the nature, use, or operation of the elements named, but cannot supply such elements nor be construed to cover all structures by which the given results may be attained. How, then, are the claims here limited?

"The claims in suit call simply for a pneumatic tire of normally circular cross-section, modified from 'standard practice' for the same load (1) by a substantial increase in cross-sectional area and (2) a substantial decrease in ratio

of wall thickness to cross-sectional diameter. It is true they also contain the phrase 'designed to carry a predetermined normal load at a substantially reduced inflation pressure,' but the purport of this is purely functional, and it can add nothing to the claim descriptive of the elements called for. These claims are attacked for indefiniteness both because of the use of 'substantial' and the use of a supposed 'standard practice' to show the novel variation.

"Putnam doubtless had in mind an actual decrease in wall thickness for tires of the same diameter in customary use, and the use of larger tires of such type where smaller ones had theretofore been used, for he says in the specification that he has reorganized the entire wheel, 'increasing the cross-sectional diameter of the tire relative to the circumferential diameter thereof . . . . and correspondingly decreasing . . . . the thickness of the fabric walls of the tire.' But the claims do not so state. There was no 'standard practice' for wall thickness. There was no 'standard practice' for the *minimum load* to be used with any particular size of tire. The 'standard practice' had to do only with the maximum load for a given size and the pressure required for such size and load. Even conceding, therefore, that the patent is addressed to those skilled in the art, and that to them there would be no difficulty in discerning the dividing line between an increase which is, or is not, substantial (cf. Eibel Process Co. v. Paper Co., 261 U. S. 45), which is somewhat difficult here because of continual 'over-sizing,' still there remains an insuperable indefiniteness in what was 'standard practice' as to wall thickness and as to the maximum size of tire to be used with any given load. The claims read directly upon the substitution of a 5-inch tire upon the lightest of cars, in place of the former 4-inch tire, or the substitution of a 7-inch tire upon a heavier car, in place of a 5-inch, even though there were no actual change in wall thickness involved in making the substitution, yet this is a mere change in size, unpatentable, and as to which there is no 'standard practice' in evidence.

"But conceding further that the claims may be read as requiring, not only a decrease in ratio of wall thickness to cross-sectional area, below the ratio of the smaller tires of the supposed 'standard practice,' but also a decrease below the ratio which was theretofore 'standard practice' in tires of the same larger size, that is, a decrease in actual wall thickness as between the new and old tires of the same diameter, and that there was something more in this step than mere craftsmanship and the adaptation of the wall thickness to the pressure the tire was designed to hold, yet there was nothing new in such a pneumatic tire, as a tire. The airplane tires in common use long before Putnam's application date answer every call of the claims, increase in cross-sectional area and decrease in ratio of wall thickness below that of other commonly used tires of the same size. It is argued that these tires are not 'automobile road tires' because they have no treads, breaker strips, or other characteristics of automobile tires. Yet it was clearly and convincingly proved that the witness Mulford so used them more than 2 years prior to Putnam's application.

"Furthermore, every disclosure which can reasonably be gleaned from the patent in suit, certainly the precise combination of elements found in the claims, is also found in the French patent to Perrot, No. 489,671, March 1, 1919. Here again it is said that this is not a 'road' tire, and would not stand up under heavy use; but the patent in suit does not teach even those skilled in the art how to make a 'road' tire, the number of plies of reenforcing cords which it is necessary to use, the use of breaker strips, the nature and method of attaching the tread, etc. The claims depend for their novelty merely upon an increase in cross-sectional area, without increase in outside or circumferential diameter, and a decrease in ratio of wall thickness to cross-sectional diameter, because of which elements the supposedly new tire has the function of lower inflation pressure required and easier riding qualities. So considered, the Perrot patent is a complete anticipation—the Mulford use of the airplane tires upon his 'special,' a clearly and convincingly proved prior use, without regard to his similar use of the Brender tires. The latter we also consider as sufficiently clear in proof and as constituting an additional prior use which would defeat the patent, were recourse to it necessary.

"Under the foregoing circumstances, we consider it unnecessary to discuss in detail the defenses based upon the prior publications relating to the Palmer tire; the other miscellaneous prior publications; the United States patent to Hawley, No. 1,433,008; application December 10, 1917, antedating Putnam; the prior practice of 'over-sizing'; the Marks use of the Palmer tire in this country in 1910; or the question of infringement. It is sufficient to say that practically all of these support and, possibly, each sustains the contention of defendant that, if the claims be given their obvious construction, and if they call for more than mere changes in size, plus common mechanical skill in designing, yet Putnam was not the first and original inventor. While the question of anticipation by prior patent is largely one of law, the questions of prior invention, reduction to practice, and prior use are questions of fact, upon which we are thoroughly convinced in this case, without giving to the opinion of the learned District Judge, who has heard the witness, that persuasive force to which it is entitled.

"Much is said by the plaintiff of Putnam's contribution to the art, and of how he had revolutionized the entire tire industry; and emphasis is placed, throughout, upon the supposed generic difference between 'balloon' tires and 'high pressure' tires. We do not think that the differences between the 2 are generic in this broad sense, or that the claims cover such generic difference, if it exists. But, even if they did, this could have no bearing whatsoever upon the questions of anticipation or of prior uses and publications. The contribution of Putnam to the art lay altogether in persuading the automobile, tire, and rim industries to adopt his ideas as to size of tires. That, lacking Putnam's demonstration and persuasive powers, these prior uses and publications did not materially affect the trade, does not alter the intrinsic nature of the use nor the scope of the publication."

(*To be concluded*)

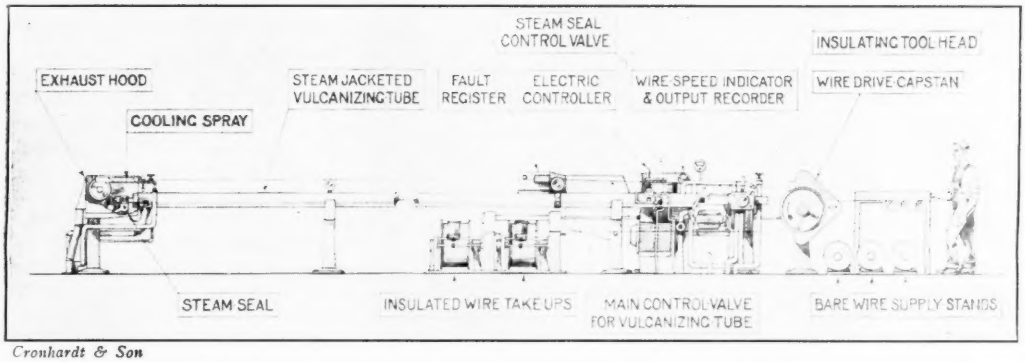
Rubber Molding

(*Continued from page* 48)

knocking out the cured heels, spraying the mold with a soap solution, setting the washers with a washer setting machine, putting in the biscuits of stock, closing the mold, and putting it into the press. The presses are in batteries of 4; each battery is controlled by a master valve so that all presses open and close at the same time. This action means that all of the molders have to make ready in the same amount of time.

The cured heels are cooled before being placed into baskets by laying out on shallow trays. This action prevents them from being distorted if placed into a basket when hot. The baskets are taken to the trimmers to remove the overflow. Each heel is inspected for general appearance, misplaced washers, poor trimming, dirty mold, and any other miscellaneous defects. The finished heels are packed either in individual cartons or in bulk, and the case is weighed, stenciled, and sent to the stock and shipping departments on an automatic belt conveyer.

Continuous Vulcanization of Insulated Wire[1]



Cronhardt & Son

Fig. 1. Diagram of Western Electric Continuous Insulating and Vulcanizing Machine

A PROMINENT electric company[2] is using a new continuous insulating and vulcanization process for the production of rubber covered wires. This system is operated for large scale production by mechanical handling equipment that is uniquely different from the conventional methods. The entire sequence of operations of insulating and vulcanizing the wire are performed continuously and automatically as shown in Figure 1.

Insulating Unit

The machine unit employed in this process consists essentially of a standard tubing machine equipped with an automatic feeding mechanism, a tubular vulcanizing chamber, a wire drive capstan for drawing the wire through the vulcanizing chamber, and the associated take-up mechanism.

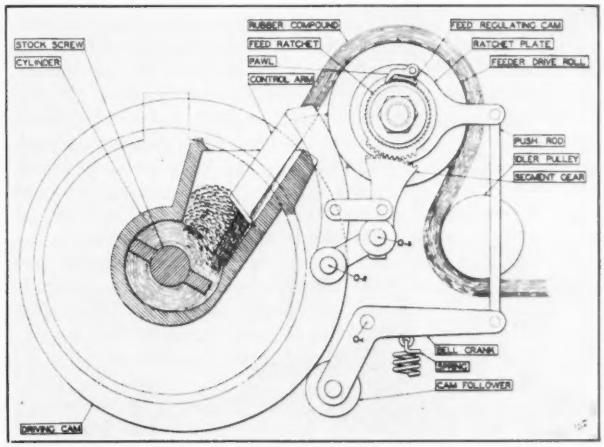
The actual manual operation consists of supplying the reels of compound and bare conductor, which are automatically fed into the machine, and removing the reels of cured rubber-covered wire as they become filled. The path of the wire through the unit is from the reels mounted on the bare wire supply stands into and through the insulating tool head attached to the cylinder of the tuber, wherein the compound is extruded upon it, into the steam jacketed vulcanizing tube, out into the exhaust hood through the steam seal in cured condition, around the sheave in the hood and through the cooling spray back to the wire drive capstan, and around this member to the insulated wire take-ups, where it is wound on the reels required for handling at the braiders.

As an indication of the output speeds obtainable with the unit, No. 14 code wire can be produced successfully at speeds up to 400 f.p.m. Nos. 19 and 20 gage wires are insulated singly at 600 f.p.m., and smaller gages, such as No. 22, having a considerably thinner wall of insulation, at 1,000 f.p.m.

In feeding compound to the machine a full reel is placed upon a pedestal mounted behind the wire drive capstan and close to the throat of the tuber. The end of the strip of compound is introduced by the operator between a pair of toothed rolls of the automatic feeder and into the throat of the machine. Thereafter it is fed into the throat as required by the feeder, whose operation is controlled by the quantity of compound within the stock screw, which in turn depends upon the velocity of extrusion of the compound upon the wire.

Automatic Feeding Mechanism

The automatic feeding mechanism is of particular interest to users of tubing machines for other purposes than the insulation of wire and is shown in detail in Figure 2. The driving cam rotates with the tubing machine stock screw and imparts to the follower and bell crank a rocking motion. This motion is transmitted to the ratchet plate carrying the feeder pawl as an oscillatory rotation about its center. The number of teeth which it engages on the feed ratchet and which controls the amount of rotation imparted to the feeder drive roll is controlled by the position of the feed regulating cam. This cam can rotate about the axis of the ratchet plate, and the number of teeth which it exposes to the pawl action is controlled by the operation of the control arm through the push rod and segment gear. The control arm derives its signal from the size of the bolus of rubber com-



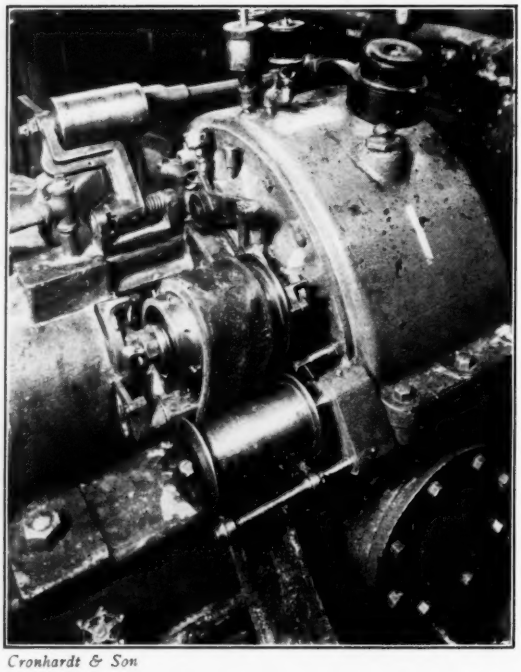
Cronhardt & Son

Fig. 2. Automatic Feeding Mechanism

[1] From "The Manufacture of Rubber-Covered Wires for Telephone Installations." Read by S. E. Brillhart before the American Society of Mechanical Engineers at Buffalo, N. Y., June 7, 1932. Published in *Mech. Eng.*, June, 1932.

[2] The Western Electric Co. Point Breeze Plant, Baltimore, Md.

pound which builds up in the corner of the tubing machine hopper. Thus, as soon as the stock screw empties itself to the point where this bolus decreases in size or is drawn into the throat of the machine, the control arm moves downward toward the screw. By this action it exposes the maximum number of teeth on the ratchet plate to the pawl which thereby rotates the feeder drive roll through a relatively large angle and feeds a considerable length of the rubber compound into the throat. Conversely, as this bolus builds up, fewer ratchet teeth are exposed and less compound fed. When in proper adjustment, the pawl engages a uniform number of teeth for each stroke, and the bolus in the throat of the machine remains of comparatively constant size. This uniform feeding results in a uniform extruding pressure and the production of smooth material.



Cronhardt & Son

Fig. 3. Automatic Tubing Machine Feeder

Figure 3 is a picture of the feeder in operation from which an idea of the actual arrangement of the details of the mechanism can be obtained. Although in its present application the feeder is used in a continuous insulating and vulcanizing process, it can be applied to any standard tubing or forcing machine and employed for feeding all rubber compounds or similar plastic materials. It feeds a band of compound 4 inches wide by ¾-inch thick from an open side reel into the throat. The proportions and the form of the supply of compound can be modified to meet any special needs. The use of this automatic mechanism by insuring a uniform extruding pressure results in close control of both size and quality of the product. Also since the extruding worm is kept entirely filled with compound without resorting to tamping in the feeding slot, there is less tendency to trap air with the compound.

Insulation

The insulation is applied to the wire as it passes through the insulating tool head attached to the delivery end of the tuber. In the conventional process of applying insulation the operator controls the centering of the conductor within the covering by manually adjusting the location of the dies or wire guide tubes relative to one another at this point. In the continuous insulating process this centering is accomplished by depending upon the precise and entirely inflexible tool set-up used, whereby accurately machined dies and core tubes are inserted into the tool head in a positive keyed position when the machine is set up. Their location cannot be changed when setting up, or subsequently adjusted during the operation of the machine. As a result of using this accurate and inflexible tool head it is possible continuously to produce rubber insulated wire with outside diameters only 3% greater than the minimum permissible diameter, and without imposing a burden of watchfulness upon the operator.

Vulcanization

As the wire leaves the die bearing the uncured insulation upon it, it passes directly into the vulcanizing chamber. In the conventional process of manufacturing rubber covered wires the insulation is vulcanized in ovens heated with relatively low pressure steam. This work usually requires several hours. In the continuous process the entire vulcanization takes place in the time required to pass the insulation through the 100-foot long vulcanizing tube, which, for example, in running No. 17 B. P. drop wire, is 16 seconds. During this time the covering is exposed to an atmosphere of saturated steam maintained at a pressure of 200 pounds per square inch. This high speed cure is made possible by a well-balanced compound in which a very quick-acting accelerator is used.

When the wire reaches the exit end of the vulcanizing tube, with the insulation cured, it is passed out through a steam seal consisting of 2 radially slotted rubber disks, which are snugly pressed against the insulation as it moves along. When it is necessary to open the seal to thread up the machine, the escaping steam is retained within the exhaust hood and drawn out by a fan.

A cooling spray is also located within this hood, through which the wire passes as it comes out of the tube. Evaporation of this spray water, as the wire passes out into the room, cools it and abstracts heat which otherwise might be retained after the wire is reeled up and thereby cause overcuring

As the insulated wire is returned to the wire drive capstan over sheaves attached to the top of the vulcanizing tube, it passes through a fault register where it is subjected to high voltage to discover and register any faults which may be present in the insulation.

Inasmuch as the angle of wrap of the wire, as it passes around the drive capstan, is only 180 degrees, a formed rubber belt presses it against the surface of the capstan and assists in providing the necessary positive driving force to draw it through the machine at a constant velocity. The finished insulated wire is taken up on a reel mounted near the operating end of the machine. As a reel fills, the operator cuts the wire and transfers it to an empty reel while the machine is operating at full speed.

Automobile and Rubber Production

Automobile production in the U. S. and Canada for May, is estimated at 185,970 cars and trucks, an increase of 20% over April, but a decline of 44% below production in May, 1931.

The first 5 months' production of 714,040 vehicles shows a decrease of 48% below production for the same period last year.

The consumption of crude rubber by manufacturers in May, totaling 29,197 long tons, increased by 12% over consumption in April to a level 23% under that of May, 1931. Stocks on hand, totaling 346,231 long tons at the end of May, increased by 1% over the previous month to a level 52% over stock held at the end of May, 1931.

Reliable Office Workers

Rubber Specialties Eliminate Noise, Relieve Strain, and Save Money

Davol Rubber Co.

Telephone Receiver Cushion

Davol Rubber Co.

Finger Pad

Rubber Cement Dispenser

RUBBER in the office. A host of advantages of this material immediately crops to mind. Lessening the din of the day's routine has a beneficial effect on the nerves of the workers, resulting in greater efficiency. Rubber in many forms also saves wear and tear on furniture, floors, equipment, and employes' clothes; while the use of rubber instead of more fragile substances eliminates breakage of office accessories. All these things in the end mean saving money—an all-important factor in these days of enforced economy.

You can scarcely glance around a modern, well-equipped business establishment without noticing a wide array of appliances wholly or partly of rubber. Take a typewriter, for instance. A cushion underneath reduces noise and jarring to make for added efficiency. While twirler rings, in red or green, on the carriage increase speed. As their inner surface is ribbed, the twirlers will not slip. They serve also as cushions on the hard corrugated platen knob. Other parts, roller, type, keys, feet, likewise acclaim the desirability of rubber.

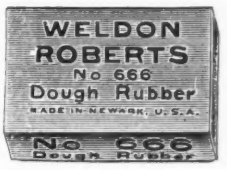
Cushions, pads, and mats play a stellar role in your office. On chairs they provide comfort for the worker to increase his efficiency and save his clothes. These cushions are made in various sizes and shapes to fit different types of office chairs.

For stools comes a grey felt covered sponge rubber cushion that fits securely over the sides and across the top of the stool. The pad's inside diameter extends 12, 13, 14, or 15 inches. A seat pad of wool surface with rubber underneath is made 13½ inches in diameter for the circular chair and 14½ by 15 and 17½ by 18 inches for rectangular models.

Cushions for stenographers' chairs appear in the following sizes: 14⅝ by 14½, 15 and 15½ by 13, 16 by 15 and 15½, 16½ by 15¼, and 17 by 15¾ inches. While cushions for general office chairs come 16½ by 15¼ and 16¾ by 15 inches. Arm or swivel chairs command seat pads 18 by 16½ and 16¾ inches and 18¾ by 17½ inches. The inside of all these cushions is a light, fluffy, porous sponge rubber composition ranging from ⅝-inch to 2 inches thick. The materials enclosing the rubber also vary. One model is velour; another a leatherwove cover of pebbled grain design with edges rolled or beaded. Corduroy plush fabric covered cushions with velour beadings also are supplied. All felt, fluted, and top cover auto cloth fabric form other coverings. These cushions, neatly tailored and vulcanized to shape, appear in red, green, blue, taupe, or brown. Many, when soiled, can easily be sponged.

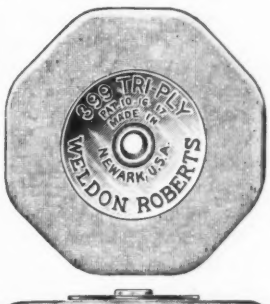
Nor is the all-rubber inflated cushion lacking. These air cushions of quilted effect, inflated with a valve, may be had in sunfast colors in 3 sizes: small, medium, and combination of seat and back rest. Other inflated cushions, both for seat and back, are obtainable in rubberized jean olive drab or corduroy top in grey, brown, blue, and chestnut. Their diameters are 15 and 17 inches. Rectangular models likewise may be had for standard sizes of chairs. Back rests, especially designed to fit the spine and afford comfort, creating greater efficiency, come 16½ by 18 or 22½ inches.

Other pads and mats find sundry uses too. A ½-inch thick resilient sponge rubber composition to which is vulcanized a layer of brown or green all-wool felt is an excellent cushion and silencer of harsh and irritating noises and vibrations of typewriters, calculators, and other office appliances. Coin mats of flexible rubber, octagonal in shape, with durable teeth and attractive wedge pattern, make picking up change very easy indeed. A rubber standing mat will prove a blessing in disguise to a cashier, a bank teller, a file clerk, or any one else whose work compels his standing for any length of time. Tired feet and leg weariness are no more when the employe stands on this grey rubber mat ⅜-inch thick by 16 by 26 inches. To allow easy sweeping of the mat without its moving it is fashioned with beveled edges.



Weldon Roberts Rubber Co.

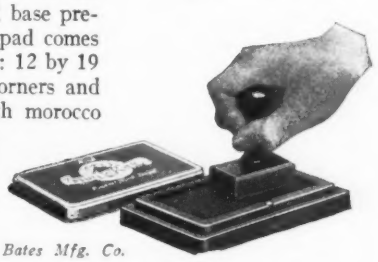
Dough Rubber



Weldon Roberts Rubber Co.

Tri-Ply Ink Eraser

Look at your desk. Isn't it a happy home for innumerble rubber items? All-rubber desk pads are growing increasingly popular. Molded in a single piece of flexible rubber that always lies flat, one pad boasts corners that resemble highly polished morocco leather and are an integral part of the back. The corrugated base prevents skidding. The pad comes in the following sizes: 12 by 19 inches with smooth corners and 19 by 24 inches with morocco corners. A choice of 3 colors is allowed: black, brown, or green, with a contrasting blotter. When soiled, the pad may be easily



Bates Mfg. Co.

Mun-Kee Silent Stamp Pad

cleaned with soap and water. For executives' desks is offered a pad with a smooth congoleum base and rubber ends or pockets. The bottom of the pad is completely covered with felt to protect the finish of table or desk. An attractive decoration blends with the congoleum, which is either brown or dark green. The sizes are 20 by 34 inches and 24 by 38 inches.

A blotting pad from abroad is fashioned of terra cotta or green rubber with molded corners. It will not slide around the desk at all. Furthermore it is washable. The blotter size is 17½ by 11 or 22 inches.

One company manufactures a complete desk set which includes a frame for a blotting paper 18⅜ by 12⅛ inches with a smaller piece 12 by 7 inches. The latter boasts space for inkwells, a pen rest, and 2 pin cups. This set is available in black or a marbled motif.

All-rubber inkwell bases have proved their worth. They also are long lasting and will not scar or mar desk tops. When soiled, you can readily clean them with soap and water. One style has receptacles for 2, 3-inch-square inkwells and a pin and clip tray between them, with pen and pencil grooves in front. A smaller model sports an inkwell space between spaces for pin and clip trays. The grooves appear in the customary place. These bases come in brown or green.

New York Rubber Corp.

Sitesy Back Rest and

New York Rubber Corp.

Chair Cushion for Office Chair

Hard rubber inkstands may be found on many desks. For the pens themselves rubber is no negligible factor. Look at your fountain pen. Feel the cushion at the base of your penholder. What about the special pens that perch so jauntily on those desk sets that are constantly gaining public favor? Hard rubber penholders also are made in several styles.

Next to the inkwell probably stand a dater, a numbering machine, several rubber stamps, and a stamp pad. The up-to-date office is more likely to have its rubber stamps attached to all rubber mounts. These flexible handles insure good impressions even if the stamp is carelessly used. Such handles have nothing to break or wear out. A style, moreover, is available for almost any purpose. Stamp pads may even have rubber bases. One innovation is all rubber, including the case and the ink reservoir, which is soft and renewable.

Pin and clip trays now are made in hard rubber with 1, 2, and 3 openings. Embedded in the rubber are pressed glass receptacles to facilitate withdrawing pins or clips. To match the other desk furnishings the trays are supplied in brown, green, or mottled tones. If you prefer a circular cup instead of a tray, you will find one of round design in the same colors as the trays and with the glass receptacle.

No office is complete without several rubber sponges for moistening purposes. These come in red in sizes such as 3 inches in diameter and 1½ inches high, 2¼ by 2½ inches, and 2¾ by 2⅞ inches.

Ordinary receptacles for sponges easily break; so rubber ones were introduced. An attractive round model, in red, blue, green, or brown, boasts specially designed concentric ridges on its base to keep it from skidding. With each cup is furnished a red sponge having a raked or corrugated surface that allows only the correct amount of moisture to cling to the fingers. Another sponge cup set consists of a red sponge all ready for use in a novel container. Its flared base prevents it from slipping; while the concave bottom creates a vacuum when it is placed on a plane surface. The special grooved construction at the base of the cup provides a reservoir for an extra supply of water. Another important feature is the design on the upper rim of the receptacle, which drains the overflow of the sponge back into the well and through the special grooves on the inside of the holder. When soiled, the cup, which is supplied in brown, green, or mottled effect, can easily be cleansed with soap and water.

To facilitate moistening and sealing, several devices have been perfected. One resembles a fountain pen with its hard rubber barrel to hold the water, which, as pressure is applied, seeps through the sponge at the tip. A somewhat similar moistener displays a handle or reservoir of rigid black stock with a rubber sponge at one end. A special valve design in the barrel prevents leakage. Fitted into the green rubber cap is a hard rubber plunging rod for opening the valve when the sponge thirsts. The receptacle for holding the moistener, when it is not in use, also is green.

Erasers are a vital necessity in every office. Thus one manufacturer advertises 88 styles. In various sizes and shapes, round, square, bias, oblong, octagonal, elliptical, and in many colors, tan, pink, red, white, grey, and green, they fill a variety of needs. Soft, hard, and kneadable plastic rubbers are offered for pen, pencil, typewriter, and even charcoal markings. Some erasers are for one type only; others are combinations. A handy brush cleverly attached to ink erasers whisks away crumbs to make for neater work. Doesn't a lead pencil seem incomplete if no rubber adorns one end? For such pencils hood or knob shaped erasers conveniently fit over either end and can also protect the point. The rubber may be used also for turning or counting pages and sheets instead of your having to utilize a finger cot.

Speaking of finger cots—you'll find many styles on the market. They are available in red in several sizes. One specimen has correctly spaced holes for ventilation on its upper surface; while its working side sports many efficient claws that grip the thinnest of sheets. These cots can be put on or removed instantly, but will not slip off. Some numbers, instead of claws, have a corrugated or ribbed surface all around. The advantage of the latter construction is that, when one part wears smooth, you twist the pad around to a new fresh surface. Pure gum, amber colored, dipped cots and plain heavy black ones likewise are at your command.

Rubber bands! What would we do without them? These important items, now seamless, appear in red, grey, and amber. About 33 different sizes are listed, ranging from a circlet ⅜-inch in diameter and 1/32-inch thick to a band of standard shape ⅝-inch wide, $\frac{1}{16}$-inch thick, and 7 inches long.

Rubber cement also is invaluable. The advantages of such an adhesive over ordinary mucilage or paste are many. Such cement sticks quicker, goes farther, works cleaner, will not dry out unless unreasonably exposed, will not curl or stain paper, and costs less. When the cement is applied to only one of the pieces to be attached, the work later may be pulled apart intact to restore it to its original condition.

Rubber flooring, of course, is excellent for the up-to-date office. But oftimes the flooring is not a question to be decided by the tenant. He wishes, however, to have his office, especially the floors, look well. What does he do? Why, equip all rolling furniture with rubber casters. These eliminate wear and tear on the floor and reduce noise, not to mention the strain on employes. For desks and other stationary furniture may be procured shoes in several sizes, square or round, of brown rubber reenforced with enameled metal insole. Like the casters, they do away with gouging and indenting linoleum, spotting rugs, marring polished hardwood floors, and skidding furniture.

How often has the feminine contingent of your staff uttered maledictions upon an unsuspecting piece of furniture because its worn edges have wrecked havoc with a pair of stockings or torn a dress. Such worn furniture, moreover, is most unsightly and will spoil the appearance of an otherwise presentable room. Cognizant of the demands, then, of a harassed office force, one manufacturer finally evolved rubber desk guards and chair protectors. The former, of brown, firm, tough composition guaranteed to last the life of the desk, are easy to apply and are packed with the necessary brads for fastening. Two lengths are furnished, 6 and 20 inches, which neatly fit over the offending member of the desk. The chair protectors are of brown strong molded rubber that will wear indefinitely. These too have required brads for fastening and can be put on very quickly. The protectors are produced in 3 sizes. No. 1, 6 inches long, is made for the corners of the seat; while No. 2, of wider design but the same length, is for the arms. No. 3, a narrow style 12 inches long, fits very neatly across the top-back of the chair.

Another glance around the office, and other uses of rubber command attention. Even the very pen or pencil in your hand employs rubber in some way. Hard rubber rulers in several sizes, shapes, and designs fill every need. What about the electric wires and socket plugs, besides the various parts of the adding machine, the calculator, the envelope sealer, and a host of other accessories that proclaim the wide serviceability of this material?

In truth, is not rubber an ideal office worker? Efficient, durable, sanitary, neat, noiseless, inexpensive—these are a few of its recommendations, and, of course, there is never any danger of its going on strike or asking for a raise.

Taxes on Tires and Tubes

Effective June 21, 1932

THE Revenue Act of 1932 includes among the new excise and miscellaneous federal taxes a levy of 2½ cents a pound on rubber tires and 4 cents a pound on inner tubes. The Treasury Department regulations covering excise taxes on manufacturers' sales on these goods follow:

Article 19. Tires. "Includes all kinds of rubber casings, rubber hoops, rubber strips or bands designed to form tread of or to fit a wheel" . . . "either solid or pneumatic, irrespective of whether designed for use on wheels for automotive vehicles, carriages, bicycles, wheel chairs, wagons, hand trucks, children's toys or other articles."

Article 20. Weight. Tax is to be "computed on total weight of a tire and tube . . . and fractional parts of a pound must be included." Manufacturer must be able to prove metal base reduction. Inner tubes weight includes weight of "air valve and stem, or any other mechanism attached thereto which may be used to inflate or retain inflation."

Article 40. Tires and tubes may not be purchased on exemption certificate by motor vehicle manufacturers, but formula is set up for auto manufacturer to take credit for certain percentage of purchase price.

Article 42. Parts and accessories sold to manufacturers of taxable articles are exempt on obtaining proper certificate thereof. "Jobbers or dealers and others who are not manufacturers of taxable articles are not entitled to purchase tax free."

Article 53. Sporting Goods. The regulation sets out the specific items named in the bill and holds tax applicable "to all similar articles commonly or commercially known as sporting goods, games, and parts of games . . . purpose of which is primarily for use either indoors or outdoors in connection with a game or sport." "Game includes games of skill or chance and every contrivance, device, or combination of articles which is designed to furnish sport, recreation or amusement. Games of the type ordinarily played or used by adults as distinguished from games designed for use of children, are subject to the tax . . . or paraphernalia, equipment, and uniforms specially designed for or commonly used in athletic contests," such as archery, baseball . . . "fishing (other than commercial) . . . tennis, golf, etc."

Article 56. "There are other articles used in sports or games which by reason of their general use for other purposes are not subject to tax unless sold as a part of a uniform. Among such are bathing suits . . . plain rubber soled shoes" . . . "Tax does not attach to children's toys and children's games."

General Administrative Provisions

Vehicles or tires sold for export are not subject to tax under the Constitution. However, the question of fact involved in determining whether an article so sold is to be used for export purposes presents a difficult administrative problem. The likelihood is that the Treasury Department following the course of decisions under the Revenue Act of 1926 will attempt to work out regulations which, while not earmarking the specific article, will provide for exemption of vehicles and tires exported by the several manufacturing companies.

Where a motor vehicle manufacturer is able to forecast his export requirements, he probably will be permitted to make tax exempt purchases, making adjustments later according to the actual sales from month to month. In order to secure such equipment free of tax the manufacturer will need to specify in his orders the number of tires which he expects to use for export equipment.

These taxes will be collected monthly by the United States Government. The taxpayer is given until the last day of the month following the month in which the sale is made to make a return. Under the present regulations of the Treasury the return must be in the hands of the Collector of Internal Revenue not later than the last day of the month mentioned. Postmarks as of that date will not be sufficient. These returns should be filed on form 728 which will be furnished by the Collector of Internal Revenue.

Effect on Industry

As a result of this legislation tire and tube manufacturers all over the country stepped up production in order to fill dealers' orders for shipment before the law went into effect.

Tire and tube manufacturers have revised prices upward from 11 to 15%, thus passing the excise taxes along to the consumer. The difference between the tax figure and the 11 to 15% price increase represents a profit to the tire makers.

Two of the largest manufacturers of mechanical rubber goods have announced a price increase of 10% on all mechanicals.

EDITORIALS

Natives—the Rubber Producers of the Future?

THE definite announcement regarding restriction has been welcomed by many planters because now that uncertainty has been removed, it is expected that weaker estates will close down, thus causing a reduction in the large rubber supply—a necessary condition for stabilization. However harsh it may sound, this view appears to be the one which those interested in the European planting industry fervently hope will prove true.

But if, as others insist, the European industry is so unwieldy that it cannot adapt itself to changing conditions as readily as the native, then must the latter win out. Those who foretell the doom of the European estates usually point to the example of coconut growing, which for many years brought handsome returns to the European planters. But today it is a native industry.

The American rubber manufacturer, consuming as he does the greater part of the rubber produced, is acutely interested in the question as to who will supply him with raw material, and the possibility that rubber growing may become largely a native industry is one which must give him food for serious thought. In the event of such a change, how would his supply be affected and what would be the price?

For the present it seems to be agreed that the problem of supplies need cause no anxiety. The potential output on native holdings and estates is huge, and with overproduction reigning in practically every paying crop in the tropics there seems to be small likelihood that rapid and widespread felling of large rubber areas will be undertaken in the near future.

The reduced output in 1931 from small native holdings in Malaya was about 200,000 tons, and in the Netherlands East Indies something under 90,000 tons. The reduction in native outputs in Malaya was about 7% as compared with those for 1929, and in Dutch native production, 17.4% as compared with 1929. When compared with the potential output of 200,000 tons, the decrease of Dutch native output in 1931 was 55%. For 1932 potential output is figured at 250,000 tons and for 1933 at 300,000 tons. The conclusion follows that potentially the greater part of the rubber demand could be satisfied by outputs from native holdings alone.

However there is the problem of disease, which on native holdings in the Dutch colonies is neglected, and to a great extent this neglect is now also true for holdings in Malaya. There is danger, therefore, of an epidemic which would destroy the native trees. But the diseases prevalent on native areas are chiefly those affecting the bark and tapping cuts; while root diseases, insidious, hence more dangerous, are far less common than on European estates. The same appears to apply to mildew—*Oidium* which causes anxiety on estates but is apparently not noticed to any extent on native holdings. These holdings are small, so should tend to localize outbreaks of disease; but what would happen if vast areas were exploited under native conditions?

Apart from the question of disease, it is not to be expected that under native exploitation estates would be operated with the method and the regularity hitherto customary. Natives tend to adjust supplies to prices to a great extent. This condition may help stabilize supplies and, consequently, prices; nevertheless it involves the possibility that consumers may have to pay more for their rubber than they have done for a long time. This supposition does not presuppose that shilling rubber will be the order again, but it does not seem likely that under established native control present prices will hold.

Causes of Reduced Exports

AMERICAN ingenuity has in the recent past been given a challenge which it finds hard to meet. After laboriously developing its home market and building up a foreign trade in many staple productions, the United States suddenly is confronted with the fact that it has not only lost leadership in many exports, but it has in some lines dropped to a very low place in the list. This situation is particularly striking in the case of rubber footwear. In 1922 American sales abroad were 4,000,000 pairs, in 1929, 13,000,000, but in 1931 only 3,291,000 pairs.

Meanwhile Japan has fairly run away with the market. Starting in 1924 with 1,300,000 pairs, it exported in 1928 10,000,000 pairs, more than all other countries, and reached a peak of 34,000,000 pairs in 1931, with Czechoslovakia a close runner-up. The secret of Japan's success is simple. Labor can be had for as little as 30 cents a day; modern machinery has been installed; raw material is cheap; overhead is light; sales cost can be kept at a minimum; and prices can be kept well within the bounds of not only Oriental but also European pocketbooks. All of these factors have retarded business resumption here and elsewhere.

What the Rubber Chemists Are Doing

Nature of Vulcanization—V[1]

H. P. Stevens and W. H. Stevens

IN PREVIOUS communications[2] we have discussed the mechanism of the vulcanization of rubber and have been led to the conclusion that the improvement in physical properties resulting from this change is due primarily to a reenforcing action of the product of the combination of rubber with the vulcanizing agent.

It is considered essential that the chemical combination between the rubber and the vulcanizing agent should first occur, as no vulcanization effect is otherwise obtainable and that this combination results in the "colloidal growth" of the reaction product throughout the dispersion medium.

At various times, especially since the advent of accelerators, it has been suggested[3] that vulcanization may be partly or wholly due to a true polymerization of the rubber molecule, in which process the combination of sulphur or other vulcanizing agent (oxygen or selenium) may be regarded as only incidental. This view receives support from the fact that "DuPrene," a synthetic "rubber" developed by the Du Pont company,[4] is polymerized to a "vulcanized" condition by heat alone.

In his Colwyn lecture to the Institution of the Rubber Industry,[5] G. S. Whitby has referred to this aspect of vulcanization, and has drawn interesting conclusions from certain analogous experiments in the vulcanization of oils. Vulcanization accelerators (for example, the dithiocarbamates, substituted guanidines, etc.) are thus regarded as polymerizing agents. Whitby found that if an oil was slightly vulcanized by heating with sulphur, i.e., so that it contained combined sulphur, and all free sulphur was then removed by extraction, the addition of organic accelerators with subsequent reheating improved the physical properties. This effect was attributed to a further "vulcanization" of the oil. It was found that the time of heating required to produce gelling of the oil was considerably reduced in the presence of the organic accelerator despite the fact that the free sulphur had been removed and therefore no further combination of oil and sulphur could take place. Arguing by analogy, Whitby concluded that in the vulcanization of rubber, organic accelerators function primarily as polymerizing agents although a preliminary combination of the rubber with sulphur is required to initiate the reaction.

It would appear, therefore, that by analogy with oils organic accelerators should function in the vulcanization of rubber in the presence of combined sulphur even if free sulphur be absent. Whitby chose oils as the subject of his experiments owing to the insolubility of the vulcanized product and other difficulties when working with rubber. The present paper describes experiments on the vulcanization of rubber in which these difficulties have been more or less surmounted and the direct action of organic accelerators in the presence of combined sulphur has been studied very carefully.

Experimental

The method adopted follows. A raw rubber mix containing 10% of sulphur was press-vulcanized in sheets and milled on a pair of differentially geared rolls until thin crepes were obtained. These were extracted with acetone for considerable periods, often after a further milling and recrepeing so as to expose fresh surfaces to the action of the solvent. In this way free sulphur was removed as thoroughly as possible, and for the purpose of the experiment it was assumed to be completely removed. From our experience of acetone extractions we are satisfied that no significant quantity of free sulphur could have remained in the rubber. In any case, as will be seen later, suitable controls were introduced to check this assumption. The "free sulphur-free" material was then mixed with accelerator and heated again. The products obtained in this way were tested physically against controls, and the results illustrated autographically. The proportion of free sulphur required to "activate" the organic accelerator was also determined.[6] The results enabled us to determine and allow for the effect produced by free sulphur and to form an approximate estimate of any vulcanization effect which might have been produced by traces of free sulphur remaining in the extracted vulcanizates.

Some difficulty was experienced in obtaining sufficient material for the revulcanization process following acetone extraction, but by using a larger model of our usual extraction apparatus[7] sufficient material was obtained for the preparation of test pieces. Wherever possible exact controls have been made, but the mechanical effects of milling with some of the specimens have been difficult to duplicate. Experiments were first made with sulphur-free accelerators, e.g., diphenylguanidine and *p*-nitrosodimethylaniline, and as these gave no further results, further experiments were made using ultra-accelerators.

Conclusions

1. Diphenylguanidine, *p*-nitrosodimethylaniline, zinc *iso*propylxanthate, and benzoyl peroxide do not effect polymerization (vulcanization) of sulphur-free rubber in the presence of a small proportion of rubber sulphide.

2. In the presence of rubber sulphide, zinc diethyldithiocarbamate has a definite vulcanizing effect on rubber containing 1% of combined sulphur. This effect is equivalent in magnitude to that produced by the presence of at least 0.5% of free sulphur in the mixing, a much larger amount than could possibly have remained after exhaustive acetone extraction. The accelerator piperidine 1-carbothionolate has a similar but weaker effect.

3. The fact that a similar but lesser polymerization is induced by purified vulcanized oil, analogous to the "activation" of the accelerators by rubber sulphide, and that the activities of the accelerators are in the same order in both cases, would indicate that vulcanization promoted by accelerators is partly a polymerization activated by the vulcanizing agent and its reaction product with the rubber medium.

4. It has been found that the smallest proportion of free sulphur to give a measurable vulcanizing effect in the presence of zinc diethyldithiocarbamate is of the order of 0.1%.

Guantal

Guantal is a trade name for diphenylguanidine phthalate. This material is recommended for the activation of the accelerator Ureka C.

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[1] *J. Soc. Chem. Ind.*, 1932, 51, 44 T.

[2] H. P. Stevens, *J. Soc. Chem. Ind.*, 1919, 38, 192 T; 1928, 47, 37 T. H. P. Stevens and W. H. Stevens, *Ibid.*, 1929, 48, 55 T, 1931, 50, 397 T. India Rubber World, Oct., 1919, 23; Nov., 1919, 85; Aug., 1928, 73, and July, 1929, 69.

[3] Cf G. S. Whitby, *Trans. Inst. Rubber Ind.*, 1930, 6, 59. G. S. Whitby and H. E. Simmons, *Ind. Eng. Chem.*, 1925, 17, 931. P. Schidrowitz, *India Rubber J.* 1927, 64, 802. D. F. Twiss, *J. Soc. Chem. Ind.*, 1925, 44, 106 T.

[4] *J. Amer. Chem. Soc.*, 1931, 53, 4197, 4203.

[5] *Trans. Inst Rubber Ind.*, 1930, 6, 60 *et seq.*

[6] See also Bruni, cf. *India Rubber J.*, 1931, 81, 841.

[7] *Analyst*, 1913, 38, 143; 1931, 56, 528. Cf. the apparatus used by Whitby for determining the acid value of rubber by extracting 30 g. at a time, *Rubber Age (London)*, Oct., 1924.

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A. C. S. Meetings

Rubber Division

THE next meeting of the Rubber Division, American Chemical Society, will be held in connection with the fall meeting of the society at Denver, Colo., Aug. 22 to 26, 1932. The Rubber Division meetings are planned for Wednesday and Thursday, August 24 and 25, with a dinner Thursday night. The headquarters of the Rubber Division will be in the Shirley Savoy Hotel, where all meetings of the Division will be held.

Chicago Group Officers

CHICAGO GROUP, Rubber Division, A. C. S., recently elected the following officers: U. H. Parker, chief chemist, Featheredge Rubber Co., 340 W. Huron St., Chicago, Ill., chairman; S. Collier, chief chemist, Johns-Manville Corp., Waukegan, Ill., vice chairman; Ben W. Lewis, technical sales department, Wishnick-Tumpeer, Inc., 365 E. Illinois St., Chicago, secretary-treasurer.

Los Angeles Group

THE Los Angeles Group, Rubber Division, A. C. S., met Tuesday, June 7, in the dining hall of the Richfield Oil Co. Bldg., Sixth and Flower Sts., Los Angeles, Calif.

Secretary W. R. Hucks, chief chemist of the Pacific Goodrich Rubber Co., Los Angeles, read a paper on "Liquid Latex," in which he explained many new and curious uses of the material and also showed many new articles not yet marketed, made by the spraying, dipping, and electrodeposition processes.

Akron Group

AKRON GROUP, Rubber Division, A. C. S., held its annual summer meeting, attended by about 180 members and guests, at the Silver Lake Country Club on Monday evening, June 13. Most of the participants devoted their time to golf; then dinner was served at 7:30, after which over 60 prizes, generously donated by several business houses including many rubber companies, were distributed by drawing lots.

Sulfoloid and Zincoloide

The trade names Sulfoloid and Zincoloide indicate respectively colloidal sulphur and colloidal zinc oxide. In colloidal form these materials are so dispersed that their particle size is 1-micron or less, in other words, less than 1/25,000-inch in diameter. They differ in effect from dry sulphur and zinc oxide which are powders composed of flocculi or clumps of particles. They are miscible with rubber latex without coagulating it, yield a more uniform mixing, and one that will not settle out.

Latex and Dispersions

Latex and Dipped Goods

G. D. Kratz

THE manufacture of dipped goods usually requires the use of solutions of a somewhat higher concentration or viscosity than that of normal latex. Such concentration may, however, be conducted during the process of dipping as well as prior to it. In some instances this seems to have resulted in a rather vague distinction between the principles involved in the concentration of latex and the purpose for which it is intended.

As a case in point, special ceramic filters or absorbent materials such as blotting paper or cardboard, have been suggested as the media for separating the rubber from the watery serum in latex. Processes of this kind appear to be on the border line between latex concentration and the deposition of rubber, depending upon the use or application of the deposited product.

The concentration of latex solutions for dipping may be carried on in a variety of ways involving chemical, physical, and mechanical processes. One of the chief methods used for concentration prior to dipping is that of creaming which can be effected by centrifuging, filtration, dialysis, or by the addition of certain substances to the latex. A variety of substances has been suggested for the latter purpose, some of which appear to increase the viscosity of the final product as well as assist in concentrating it.

If the permanent deposition of a rubber film is desired, as is the case in the manufacture of dipped goods, the rubber may be deposited on the form by any one of several different methods: namely, (1) straight dipping in solutions of normal strength as to rubber content using a non-absorbent form; (2) straight dipping with the addition of "thickeners" to normal latex to increase the viscosity of the solution; (3) by using a non-absorbent form which has previously been dipped into a coagulating solution or subjected to the effect of a coagulating gas; (4) by the use of forms with absorbent or filtration characteristics; or (5) by electrical deposition.

Straight dipping involves no other procedure than immersing a non-absorbent or non-filterable type of form into a latex solution which may be either normal or concentrated, removing it for a short period of air drying, and redipping until a film of the desired thickness has been built up. Naturally this procedure involves frequent dippings, as the film formation on each dip is relatively light. To facilitate this procedure, that is, to effect a greater deposition of rubber on each dip, a number of substances have been suggested as "thickeners" for the latex solution. But as Twiss[1] and others have already noted, such thickening processes usually involve the drying of a wet product containing a high percentage of water. With films of this character there is usually a consequent abnormal shrinkage. The resultant product is likely to appear as a wrinkled deposition which is particularly noticeable at the point where the greatest drainage occurs.

A number of patents have been taken out or applied for wherein the form is first immersed in a coagulant and then dipped into the latex solution. In some cases the effect of such a procedure is to cause too rapid coagulation of the latex and the formation of films which prevent or retard the desired drainage. This condition is evidenced most on the first dipping. If, however, a latex coagulant is used on the forms, it is essential that a uniform deposition of the coagulating film be obtained in order that the deposited rubber be of equal uniformity. This point is particularly important if a colored solution is used, as is usually the case in dipping toy balloons. Variations in the thickness of the coagulating film may produce marked differences not only in the amount of the deposited rubber but also in the color of the final product.

Forms which have an absorbent or filtering effect are subject to a number of differentiations. A ceramic filter may be said to deposit the rubber on the form *per se*. The desirability of including the serum constituents which are naturally excluded by such a procedure has long been a moot point. Most latices used for commercial purposes are highly compounded. In the case of compounded latices, if the essential constituents required in the final product are in water soluble form, it is obvious that they will not filter off, but pass through the form and fail to impart the desired physical properties to the deposited product. In other words a uniform product, when produced by this method, assumes that all of the constituents of the final deposition must be in the same state of solution and be of relatively the same particle size.

The electrical deposition of latex has been made the subject of numerous patents. The principle involved is not unlike that of the well-known metal plating process.

It is not to be assumed from the foregoing that the manufacture of dipped goods from latex solutions is without its difficulties. Such is far from being the case. Both the theory and the practice of any of these procedures is subject to much future development, as compared with the facility with which dipped goods can be manufactured using compounded or mill mixed rubber dissolved in an organic solvent.

For example, it has been stated by Warren[2] that owing to the insulation of the rubber globule "the fullest advantage can be taken of the use of super accelerators without danger of premature vulcanization and its attendant effects." Granting that the theory involved in this statement is not subject to dispute, in practice the result is not always that which is desired. Without going further it may be said that in many instances latex solutions frequently show a tendency to gel or "set-up" which cannot be attributed entirely to premature vulcanization. Compounded latices may in time even approach the consistency of creamed latex or even gels. In most cases, where such an effect asserts itself, it is not entirely desirable.

There is also a wide variation in the results obtained between the incorporation of colors in rubber on a mixing mill and adding dyes or colored pigments to a latex solution. In the first instance the colors, pigments, vulcanizing agent, and accelerator are thoroughly ground into the rubber with the so-called "smearing" effect. Such a mixture constitutes what has heretofore been recognized as homogeneous from a manufacturing standpoint.

With latex, however, one has to deal with a sensitive colloidal solution. In order not to disturb the equilibrium in the solution the colors, pigments, vulcanizing agents, accelerators, etc., must be of approximately the same state and size as the rubber particle or in water solution. Further, the compounding ingredients must be added to the latex as such and function as such, rather than become but a part of a "homogeneous" mass as is the case of a compounded rubber which is subsequently dissolved in an organic solvent.

Latex solutions also present a decided advantage over rubber dissolved in organic solvents in that there is much less tendency to blister than in the latter instance. The quality of the latex dipped product, moreover, is superior in many ways to that formed by dipping in a naphtha or other solution of well-broken-down rubber. Lastly, all things considered, the latex dipped product should be the cheaper of the 2 methods.

Dipped goods, in spite of the difficulties with which we are now confronted and which are yet to be overcome, can or will be manufactured from latex solutions with greater ease, economy, and less risk than

[1] *Trans. Inst. Rubber Ind.*, VI, 5, 423 (1931).

[2] *Ibid*, VI, 5, 433, (1931).

has been the case in the past where rubber mixtures were dissolved in organic solvents, most of which were of a highly inflammable nature.

This conclusion takes into consideration due allowance for original investment, floor space, insurance, and all those factors which enter into the conduct of a successful business.

Novel Applications of Latex

THE use of latex has intrigued the layman as well as the technical staffs of industrial organizations. In many cases, although the results were not all that were desired, the efforts of the experimenters seemed to have been directed along logical lines of endeavor. The failure or partial success of these attempts may be attributed more often to lack of knowledge of the materials with which the operator worked than to a faulty original idea.

A number of these attempts to utilize latex to advantage for rather novel purposes may find solution in the near future. Some of them even now are subject to more serious consideration than has been given in the past.

In several instances latex has been tried as a lubricant for heavy machinery. In one case, at least, it was placed in the transmission of an automobile with good results, until coagulation resulted.

A substantial number of fur coats were repaired with latex in a satisfactory manner. The rubber was not, however, subsequently vulcanized. No complaint was made until some of the coats were sent to the dry cleaners.

Candy, particularly chocolate, deteriorates rapidly when used for display purposes. Chocolates were sprayed with latex in an attempt to form a rubber coating which could afterward be removed and employed as a mold for casting other materials which in turn could be colored to represent imitation candy. The desired stiffness could not be imparted to the latex film.

A number of attempts have been made to employ latex for waterproofing surfaces of buildings. In addition to waterproofing, latex was thought to be of value in preventing the unsightly exudations of salts from within that are common to some types of brick and concrete construction. Solutions containing latex have been tried from both of the above standpoints. In most instances the solution used was found unsatisfactory for a variety of reasons, not the least of which was poor aging under the conditions to which it was subject.

The low melting wax long used on documents has the disadvantage of being brittle, cracking off under flexing, and requiring a flame to affix it. It was thought that a mixture containing latex to impart flexibility could be packaged in tube form and used for the same purpose. Although the mixture took a fair impression, it dried too slowly for practical purposes.

Plate glass show windows, particularly those of large dimensions, require careful placement to prevent undue strain. They must also be cushioned to allow for the distortion caused by passing trucks, blasting operations, and similar occurrences which may cause strain and cracking. Thick solutions of latex were tried around the edge of the glass with only partial success because of the uneven drying out of the latex paste.

In certain types of color printing an oil impression is made on a celluloid sheet and photographed. If the celluloid sheet could be dipped into a dye which would color only that portion of the celluloid not covered by the oil, and the oil subsequently washed off, a decided saving could be effected. Latex was tried as a coating for the celluloid, and although its transparency met the requirements desired, no dye was found that would color the latex effectively.

Reducing Alkalinity of Latex

THE alkalinity of latex preserved with ammonia introduces difficulties in the manufacture of rubber articles by electrodeposition and chemical coagulation processes. This excess alkalinity can be reduced by treating the latex with various adsorbents. Silica gel, activated carbon, and activated aluminum oxide are specified[1] for this purpose.

Preference is given to silica gel because of the rapidity with which it reduces alkalinity. It has substantially no effect on the other properties of latex, such as the electrical conductivity, the concentration, etc., and does not induce coagulation. Activated carbon, although somewhat less active than silica gel, has a similar effect upon the alkalinity of latex and aqueous dispersions of rubber, gutta percha, balata, reclaimed rubber, synthetic rubber, rubber isomers, and like products.

[1] U. S. Patent No. 1,850,673, Mar. 22, 1932.

Microporous Rubber from Latex

MICROPOROUS rubber is made by converting latex into a homogeneous cohesive jelly and then vulcanizing under specific conditions.[1] The transformation takes place when a coagulant is added so that the latex thickens and then congeals to a solid gel. However not all latex reacts in this way. In some cases, particularly with concentrated latex, lumps form when the coagulant is added, making it difficult to handle. This difficulty may be overcome by adding casein or other albumin product which standardizes the latex, delays coagulation, and prevents the formation of lumps. The amount of casein should preferably be less than 2% of the rubber. Coagulation may take place immediately in spite of the presence of casein if the latex and coagulant is heated. In this case the casein as powder or as a solution in ammonia or potash lye or mixed with the coagulant may be added to the latex.

[1] German patent 542,648. H. Beckwin, Berlin.

Dipped Cots

RUBBER cots and gloves made by the dipping process have walls of uniform thickness and when such goods are required with heavier portions, it becomes necessary to make them by molding. A simple patented method[1] has recently appeared that provides for making dipped cots, gloves, etc., with reenforced tips. This result is accomplished by dipping the forms one or more times to secure the desired thickness of wall, drying the coating between each dip, all the while maintaining the form in the position in which it was dipped so that the goods will dry with the teats on their tip portions. The thickened wall thus formed on the ends of the finger tips of the goods effectually reenforces the articles against readily breaking in service.

[1] U. S. Patent No. 1,848,164, Mar. 8, 1932.

Statex A—Latex Stabilizer

Statex A is a liquid stabilizer used to enable latex to hold a greater quantity of compounding materials in suspension with it and to prevent the mass from coagulating and precipitating out. Statex is generally used to the extent of 10% on the rubber content in the latex. It can be used with practically any rubber suspension as well as with latex.

Patents

Dominion of Canada

321,900. **Impregnated Product.** Koppers Co., Pittsburgh, assignee of H. J. Rose, Penn Township, both in Pa., and W. H. Hill, Arlington, N. J., co-inventors, all in the U. S. A.

United Kingdom

365,350. **Gas Cell Composition.** Goodyear Tire & Rubber Co., Akron, assignee of W. C. Calvert, Cuyahoga Falls, both in O., U. S. A.

365,466. **Latex Paper Coating.** H. J. Prins, Hilversum, Holland.

365,546. **Aqueous Dispersions Product.** Dunlop Rubber Co., Ltd., London, Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands, E. A. Murphy and E. W. B. Owen, both of Ft. Dunlop.

365,547. **Aqueous Dispersion Product.** Dunlop Rubber Co., Ltd., London, Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands, and E. A. Murphy, Ft. Dunlop.

365,564. **Latex-Fiber Composition.** Soc. Invenzioni Brevetti Anon. Torino, Turin, assignee of A. Ferretti, Milan, both in Italy.

366,044. **Electric Deposition.** Siemens-Elektro-Osmose Ges., Berlin, Germany.

Germany

550,275. **Treating Latices.** K. D. P., Ltd., London, England. Represented by F. Cochlovius, Frankfurt a. M.

550,276. **Aqueous Dispersions.** Societa Italiana Pirelli and U. Pestalozza, both of Milan, Italy. Represented by H. Herzfeld, Berlin.

551,114. **Objects from Concentrated Aqueous Dispersions.** Anode Rubber Co., Ltd., London, England. Represented by R. and M. M. Wirth, C. Weihe, and H. Weil, all of Frankfurt a. M., and T. R. Koehnhorn, Berlin.

551,467. **Porous Rubber from Aqueous Dispersions.** Dunlop Rubber Co., Ltd., London, England, and Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands. Represented by R. and M. M. Wirth, C. Weihe, and H. Weil, all of Frankfurt a. M., and T. R. Koehnhorn, Berlin.

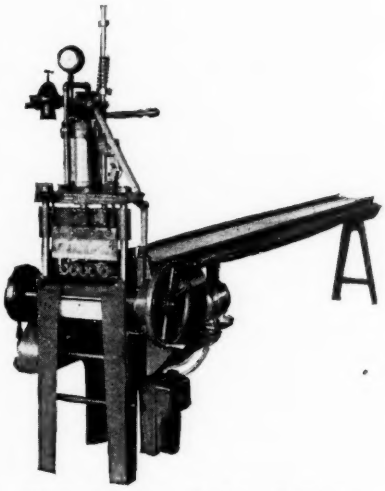
New Machines and Appliances

Automatic Stock Cutter

THE illustration represents the standard guillotine cutter for cutting raw or cured rubber into pieces of exact lengths without the use of water. The cutting is accurate, automatic, and controlled by compressed air. The machine is either motor driven or hand operated as desired.

Lengths of stock to be cut are laid upon a long endless belt which advances them toward the knife by means of a feeding mechanism that can be accurately adjusted. The machine operates 20 to 50 strokes a minute. It will take stock up to 12 feet in length and cut as many lengths as can be fed through a 12- by 2-inch opening. For example, 12 pieces of stock 1 inch in diameter by 12 feet long can be fed through the machine at the same time and be cut into 240 pieces at 20 strokes per minute or 600 pieces at 50 strokes per minute. Stock can be cut into lengths from 1/32-inch to 15 inches. Larger sized machines are built to order.

The introduction of this improved stock cutter is an economic event of much importance for the preparation of blank forms for small molded articles and for exact cutting of similarly cured extruded articles. Black Rock Mfg. Co., Bridgeport, Conn.



Black Rock Standard Stock Cutter

Monoband Cycle Tire Machine

IN THE illustrations Figure 1 is the front view and Figure 2 the rear of an improved monoband machine for building wired-on cycle tires. It not only builds up the casing but also applies the tread and completes the tire ready for vulcanization. A large proportion of cycle tires made throughout the world are manufactured on this machine, which reduces to a minimum both the handling and the wastage of material. Correlation of the machine parts in action is as follows:

The machine is driven by a single h.p. motor, *A*. The power, being transmitted by belt drive to the first motion shaft *B*, conveys it by a worm gear and straight tooth drive to the drum *C* in Figure 1. This is fitted with interchangeable sleeves which are changed for different sizes of tires and grooved differently to accommodate the various widths of casings.

In Figure 1, *D* is an idle drum with interchangeable sleeves of constant diameter. These are changed only when different grooves are required for the wires set for the width of the casing.

The drum *D* is mounted on a sliding head, *E*, operated by a double acting compressed air cylinder *F*, controlled by a valve. The cylinder puts tension on the wires on which the fabric is wrapped to form the casing.

To obtain the desired number of wraps a spool wheel, *H* is provided, driven by a change wheel from shaft *B*. This wheel is slotted as shown at *J*, to enable the wires to be placed in position and the finished cover to be removed. The spool wheel drives fabric holder *K* in Figure 2. Here adjustment is required to provide the correct angle for the wrapping of the fabric. A foot pedal *M* is depressed to set the machine in motion, and operates the plate clutch *L* in Figure 2. To stop the machine, pedal *N* is depressed.

The rubber tread is fed to the machine down the guide *O* and is pressed on the carcass by roller *P*, which is drawn into contact with the casing by the weight *Q*, and pushed away by lug *R* when the tension on roller *D*, is released. It is necessary to press the fabric overlaps together, and roller *T* provided for this purpose, is operated by lug *R*.

Tire Building

In operation, wires are placed on rollers *C* and *D* and tension is applied by cylinder *F*. A spool of fabric is placed on the holder *K* in Figure 2, and is led round the wires. Pedal *M* is now depressed, and the machine starts revolving, wrapping the fabric round the wires. When the fabric has just passed the roller *P*, the tread is applied. When a sufficient number of wraps have been applied to cover the wires, the fabric is cut off, but the machine is allowed to proceed until the tread rubber can be joined up. The average production on the machine is 60 to 70 complete covers per hour, and as many as 80 have been produced by expert female labor. Francis Shaw & Co., Ltd., Bradford Manchester, England.

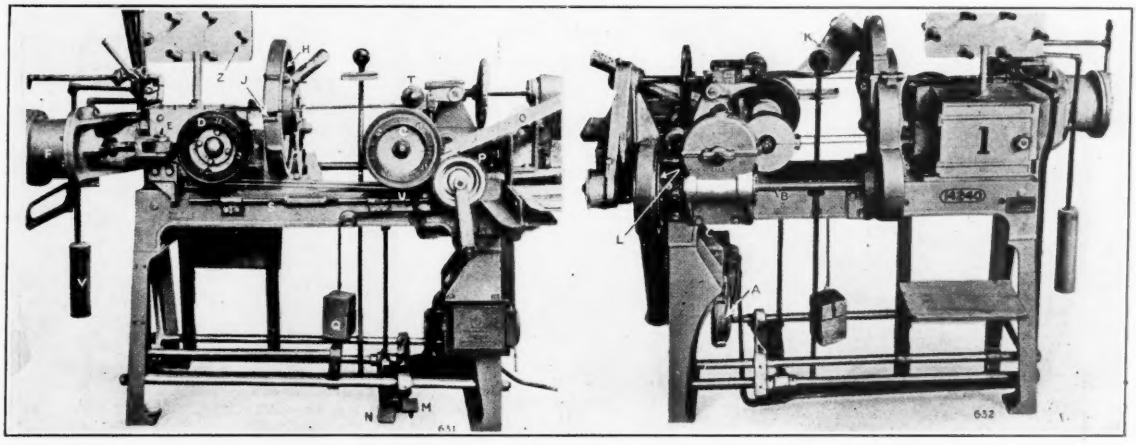


Fig. 1. Front View **Fig. 2. Rear View**

Monoband Cycle Tire Machine

Straight Line Plasticator

THE 20-inch straight line, 2-stage plasticator, here illustrated, the result of 5 years of development, embodies a number of new outstanding features. One of these is the ability of the 20-inch machine to receive a whole bale of rubber at once, thus saving handling and labor.

The 2-cylinder type of 2-stage plasticator produces from 5,500 to 8,500 pounds an hour of "first pass" smoked sheet. The discrepancy in the figures results from the head setting, which may be anything from about ⅛-inch radial clearance, or "opening," to ½-inch. The closer the setting, the smaller the production and the better the plasticity. The wider openings are never used unless it is intended to pass the rubber through the plasticator a second time.

A bale of rubber, put into the machine by the mechanical means shown in the illustration, is pressed down upon the screw with sufficient force to enable the latter to bite off chunks of such size as it can push forward into the first stage. There the rubber is passed over the rounded tops of the triple-thread screw again and again until it reaches a wide groove at the end of this screw. Very little forward pressure is generated up to this point, but 2 plows of special shape take the rubber out of the groove and lift it into the second stage at a pressure of upwards of 1,000 pounds a square inch. At this point a 2-thread forcing screw boosts the pressure up to a maximum of 2,500 pounds a square inch and forces it through the kneading head where the final work of plastication is accomplished.

The entire mechanism of the 20-inch machine has been reduced to the simplest form which will accomplish the desired purpose. The rotor is carried on very heavy roller bearings because of the necessity of holding it central. The actual loads carried by these bearings are so small as compared with their ratings that with ordinary care in lubrication their life should be very long. There is a large thrust developed by the action of the second stage screw, and this is taken care of by a large Kingsbury thrust bearing especially designed for the machine. It is housed in a rigid, oil-tight chamber with means for keeping out dirt or grit, even through the medium of the lubricant used.

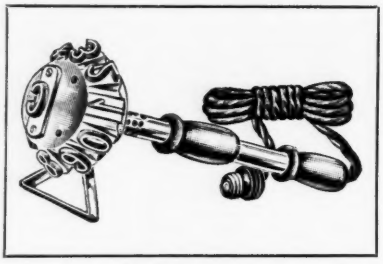
The design is equally adapted for slow or high speed motor drive. The jack shaft turns at about 100 r.p.m. and a slow speed flexible coupling for connection to a reduction unit or to a slow speed motor is provided. 600 h.p. is required at 600 to 720 r.p.m., or 100 to 120 r.p.m.

The overall floor space is 23 feet 1¾ inches long and 10 feet 6 inches wide. If a reduction unit is used, the length is 31 feet 8 inches and the width overall 11 feet 11½ inches.

The weight of the machine is 65,000 pounds; the jack shaft assembly 8,500 pounds, and the 600 h.p. reduction unit 25,000 pounds, or a total weight of 98,500 pounds. Farrel-Birmingham Co., Inc., Ansonia, Conn.

Electric Burning Brands

IT IS customary for tire manufacturers to apply serial numbers to tires or mark "seconds" by an electrical rotary numeral brand of the kind pictured. The



Tire Brand

purpose is to record mileage and identify the tire. The numerals are made ½-, 1-, or 1¼-inch with room on the face of the brand for 2 interchangeable letters. The iron is heated from a 110-volt lamp socket.

Branded tools and products are indelibly identified and carry the manufacturer's name and sales message far and wide. Burning Brand Co., 452-54 N. Ashland Ave., Chicago, Ill.

Stress-Strain Recorder

A STRESS-STRAIN recorder originally perfected for Southwark-Emery testing machines has been adapted for service with all makes of machines using hydraulic pressures for load measurements. The principle of operation is based upon that found in the most accurate of recording instruments: namely, the use of an outside source of power (a small motor in this case) to operate the moving parts, the motion being controlled by the values to be measured. Baldwin-Southwark Corp., Southwark Division, Philadelphia, Pa.

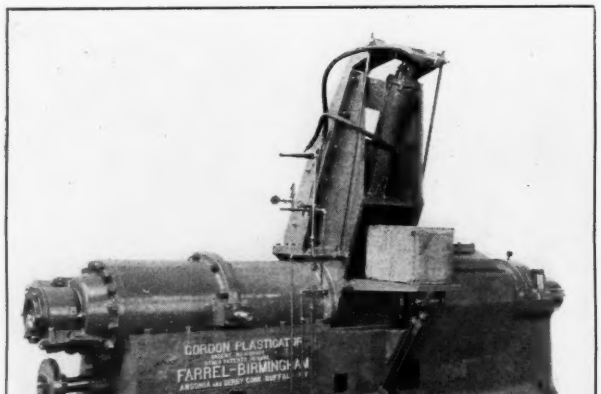
Automatic Feeders for Tubing Machines

ROYLE tubing machines, new or in use, can now be equipped with the Western Electric Co.'s patented automatic feeder that is illustrated and described on page 51 of this issue. It insures feeding exactly the right amount of compound at all times automatically. John Royle & Sons, Paterson, N. J., has been appointed manufacturer and agent by Electrical Research Products, Inc., subsidiary of Western Electric Co., and is prepared to furnish and install the feeder on Royle tubing machines for certain uses.

Carboy Tilter

A VERY simple and easily applied safety tilter for dispensing acids, alkalies, and other chemical fluids from carboys is pictured in the illustration.

The device consists of a pair of bow-shaped supports attached to a steel frame, which is placed on the carboy and locked in position by turning a clamping screw. The carboy is then tilted or rocked on the bows and may be handled under complete control during the pouring movement. Merrimac Chemical Co., Inc., Everett Station, Boston, Mass.



Gordon 20-Inch Straight Line Plasticator

Safety Carboy Tilter

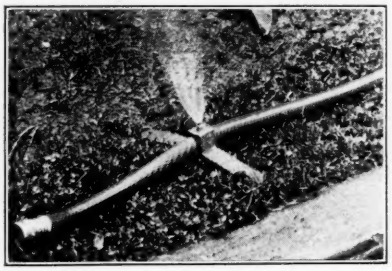
New Goods and Specialties

Goodrich "Multispray"

AN INNOVATION in lawn sprinklers was conceived by N. L. Hood, manager of the mechanical inspection department of The B. F. Goodrich Co., Akron, O. This development is an application of the inner tube valve and is being manufactured by one of the major valve companies. The valves throw a 12-foot spray under normal water pressure.

Three of the sprinkler units are installed in a 25-foot length of garden hose, and any number may be used at one time. The unit is inserted through a small hole in the hose and locked in place similar to the method used in securing tube valves.

A small screw regulates the spray, and a removable metal clamp holds the hose in position. By regulating the hose nozzle the entire stream is sent through the sprays.



Novel Garden Hose

When the sprinklers are not in use, the set screws are turned down; and the hose may be used as a regular garden hose.

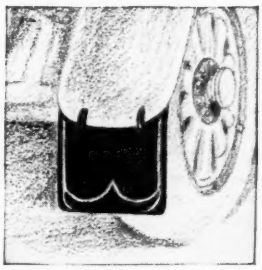
Goodrich has sponsored the patent, and the product is manufactured as the Goodrich "Multispray."

All Rubber Fender Flaps

HOW unsightly the back of an automobile looks, spattered with mud, oil, or tar. But not so one sporting C.O.T. Velvet Grip all rubber fender flaps, product of the Tingley-Reliance Rubber Corp., 6-30 Ross St., Rahway, N. J. These accessories, molded in one piece of crude rubber to a design representing the latest fender style, are made in 2 sizes, regular and extra large.

Among the advantages attributed to these flaps are they fit tight against the fenders and automatically assume their proper positions while permanently keeping their shape. They are assured long wear, for they will not fray, wrinkle, tear, chafe, or discolor. They are suitable for winter or summer use.

A pair of Velvet Grip flaps can be attached to a car in one minute as they are applied easily, merely with a slight push of the hands. The heart of the clamp is interesting. A spring specially treated and fashioned to act on a fish-hook principle is molded as a core in the rubber clamp, thus assuring a tight and permanent attachment.



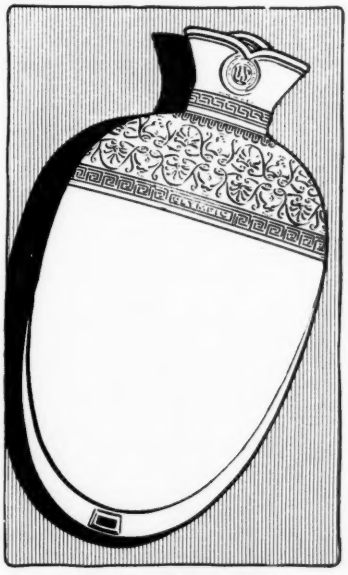
Velvet Grip Flaps

The use of these fender flaps eliminates danger of damage from loose cross links. Nor has the flap any metal to scratch the finish on the fender. No tools are required to attach these flaps or keep them securely in position. Once in place, they need no further adjustments.

Urn Shaped Water Bottle

INSPIRED by the shape and the design of a famous urn of Ancient Greece, the United States Rubber Co., 1790 Broadway, New York, N. Y., has created a hot water bottle following these lines of classic beauty. Olympic, as this new vogue in water bottle styling is known, is richly molded, even to the tab by which it is hung. The marking to indicate capacity is inside the funnel where it need be seen only during the filling operation. Even the manufacturer's seal is inconspicuously placed amid the neck engraving. According to the maker this new water bottle is a skilful combination of beauty and utility. It is offered in 2 colors: turquoise green and burgundy red and boasts a 2-quart capacity.

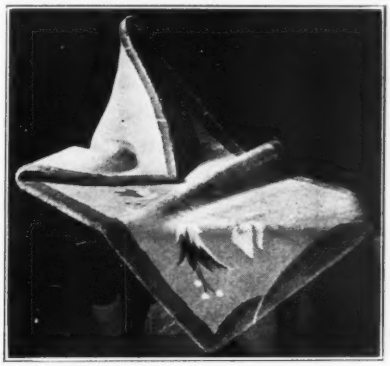
A fountain syringe and a combination syringe also come in the new shape and design.



Olympic Water Bottle

Sponge Rubber-Backed Rug

THE rug represented by the illustration is an innovation in design and construction. It is particularly adapted for boudoir and bathroom use and comes in beautiful combinations of pastel shades that contribute new color charm to the decorative scheme of the home.



Joel Feder

The Shelton Rug

The rug consists of high-pile plush backed with fine sponge sheet rubber in light ecru color. This construction, now being patented here and abroad, makes this rug nonslipping and insulating and gives it remarkable resiliency under foot. This rug, furthermore, can be washed repeatedly without special care. Actual laundry tests have shown that it will withstand any number of washings without loss of any of its original texture or color. Beauty, utility, and safety are thus combined in unusual degree by this construction. The rugs are made in various sizes from 18 by 36 to 36 by 72 inches. The Shelton Looms, Sidney Blumenthal & Co., Inc., 1 Park Ave., New York, N. Y.

Anti-Window Rattler

A NEW type of metal window brace to stop rattling is equipped with a molded, ball-shaped piece of rubber on the end that contacts the window, to save marring the wood or the metal sash. E. Edelmann & Co., Chicago, Ill.

Technical Communications

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Guinet's Green

CHEMICALLY Guinet's green is a hydrated chromium oxide containing approximately 50% physically combined water which is liberated at a temperature of about 450° F. Its specific gravity is 3.14. Fairly high percentages of this material are required in a rubber compound to give a rich clean color. It is permanent to light and the action of heat, steam, and chemicals used in compounding rubber. It contains no objectionable impurities such as copper or manganese and has no oxidizing effect on rubber which makes its aging characteristics attractive. Data from C. K. Williams & Co., Easton, Pa.

Zinc Oxide

ZINC oxide is employed in the rubber industry primarily for activation of organic accelerators, reenforcing effect, as a white pigment, and as wire insulation.

All the principal organic accelerators in commercial use at the present time require zinc oxide for activation. In cases where it is not actually necessary for the proper functioning of the accelerator, its use gives improved physical properties, both initially and after aging. Theoretically, the amount this material required for activation is the relatively small quantity required for the reaction. In the majority of compounds 4% on the rubber is considered the low limit for satisfactory results.

Kadox with its large specific surface relative to other oxides and its chemical purity is the most effective form for use as an activator. Especially in the case of some accelerators using low temperature cures. However, when added fatty acids are present in a compound, the differences in the activating properties of the several types of zinc oxide are minimized, due probably to the fact that a considerable proportion of the oxide has combined with the acid to form the soluble zinc soap during milling, in which condition zinc is especially active.

Zinc oxide has the lowest hysteresis loss and the highest conductivity of any of the reenforcing pigments commonly used in the rubber industry. It also has a high heat capacity. Zinc oxide compounds, therefore, when properly cured, tend to maintain lower temperatures when in use than compounds of other pigments. These associated properties are responsible for its extensive use in all applications where heat is a factor. Solid tires, heavy duty inner tubes, breaker, cushion and carcass compounds, air-bags, shackle blocks, conveyer belting, rubber packing, and sundry mechanical rubber goods are some of the important items in this field.

Considered from every angle zinc oxide is the most satisfactory pigment available for the production of white rubber products. It is entirely opaque to ultra-violet light, and this property doubtless plays an important role in the results obtained by its use.

In insulated wire and cable compounds zinc oxide performs a dual role. It imparts the required reenforcing properties, including resistance to abrasive wear, and aids materially in maintaining these properties over a long period of useful life. At the same time its use permits the production of insulators having the desirable electrical properties—high insulation resistance, low power factor, and low dielectric constant. The 30% mineral base compound, which has been standard for a number of years, contains approximately 36% of zinc oxide. Data from The New Jersey Zinc Co., 160 Front St., New York, N. Y.

Care of Airbags

IN MANY plants the care of bags is given great attention, which, of course, tends to longer life. After the outside hardening has penetrated to a certain depth, the cracked surface is burned or scraped off, and a new cover is cured on. The bag is thus rejuvenated and, as long as the inside remains in good condition, it will continue to give service.

Sometimes bags fail from the inside by softening and developing internal cracks which rapidly spread outwards; this trouble is usually due to insufficient cure or excessive oil in the compressed air. When it occurs, it is difficult to get more than 40 or 50 "heats" from a bag, and the bag is usually not worth recovering.

The most commonly used dope for the inside of bags to keep the surface soft is pure glycerine, a few ounces of which are injected now and then. Glycerine, of course, is useless when hot water is used. Aqueous solutions of certain active reducing agents such as sodium sulphite also have been used to prevent oxidation of the inside surface, a method which appears to have some beneficial effect when air is used.

Of great importance in prolonging the life of airbags is careful handling in the processes of bagging and debagging. After a bag has been used once or twice, it tends to flex at the same places when it is doubled up for insertion into a tire. Repeated bending at the same place soon develops a crack. By changing as far as possible the position of the bend from heat to heat, it is possible to postpone considerably the development of flex-cracks. Similarly, in debagging, the tire should not be placed in the debagging machine so that the bag valve stem is always in the same position.

Bags should not be used again immediately after removal from a tire; the hot rubber is tender and much more easily damaged than when it is cold. Some may not agree with this procedure. It means that the bags should be allowed to "skip" and cool off completely, which entails the use of at least 2 bags to each mold in use. *Vanderbilt News*, Oct., 1931. R. T. Vanderbilt & Co., 230 Park Ave., New York, N. Y.

Thiokol

THIOKOL is a synthetic chemical product possessing some of the physical characteristics of rubber, but differing widely from it in chemical composition. It is not to be considered as a synthetic rubber or a rubber substitute. It does things that rubber does not do. This product results from the reaction of ethylene dichloride and sodium polysulphide. By analysis it contains essentially 15.5% carbon, 2.5% hydrogen, and 82% sulphur. It is important to understand that the high sulphur content is not present as a mechanical mixture, but is in actual chemical combination with the other elements.

In appearance Thiokol is homogeneous, firm, dense, and pliable. It is opaque and pale yellow in color and has a characteristic odor. When heated, it becomes somewhat plastic, but does not melt. It is insoluble in any of the usual solvents and does not deteriorate chemically over long periods.

This product can be cured by mixing into it any one of a number of ingredients such as zinc oxide, and heating at a reasonably high temperature. Compounding and curing greatly improve its strength, elongation, hardness, and elasticity, and extend the scope of its applicability. Compounds do not age or perish in storage. Oxygen does not appear to affect it. Even the ozone generated during electrical corona tests does not cause disintegration. Neither does exposure to sunlight cause surface checking. A typical press cure for Thiokol is 50 minutes at 40 pounds' steam pressure, (287° F.).

Thiokol compounds can be made to unite with rubber during vulcanization, and while satisfactory at usual atmospheric temperatures, they are ordinarily not recommended for temperatures above 170° F. Data from Thiokol Corp., Yardville, N. J.

Rubber Industry in America

OHIO

The Philadelphia Rubber Works Co., Akron, through Sales Manager H. A. MacKusick has announced that besides closing its New York, N. Y., office on April 30 it also shut down its Oaks, Pa., factory, which will remain closed until the status of the reclaiming industry warrants its resumption. Meanwhile all efforts are concentrated at the Akron works. The company reports also that it is very busy. May sales exceeded those of April by about 40% in spite of the continued decline in the price level of crude rubber.

Stalwart Rubber Co., Bedford, which recently received an order for 10,000,000 tires for toys, is enlarging its plant by 36,000 feet of space. The company has decided to manufacture washers, gaskets, and packing besides the garden hose and molded specialties which it has made for years. The president of the firm is Herman Osborn.

The Universal Engineering Corp., successor to The Patterson Engineering Corp., 109 N. Union St., Akron, is designer, engineer, and manufacturer of machinery for rubber, plastics, fuel, and other industries. Russell B. Koontz is secretary and treasurer.

F. A. Seiberling, president of the Seiberling Rubber Co., Akron, has resigned as president of the board of directors, Lincoln Memorial University, Harrogate, Tenn., a post he held for 16 years.

The Tire & Rim Association at its recent annual meeting in Cleveland, elected J. E. Hale, of the Firestone Tire & Rubber Co., Akron, president.

The Mansfield Tire & Rubber Co., Mansfield, through President and General Manager G. W. Stephens has announced the resumption recently of capacity production on a 24-hour schedule. Employes will be working full time, and 100 additional men will be hired to increase monthly payrolls from $15,000 to $30,000. Three 8-hour shifts are scheduled to produce 7,500 tires daily.

Ohio Rubber Co., Willoughby, has announced that C. Edward Hyke, who resigned the managership in May, 1930, because of ill health, has resumed those duties. Mr. Hyke has had many years' experience in the rubber industry with the Buckeye Rubber Mfg. Co., later absorbed by the Ohio company, Western Rubber Co., Goshen, Ind., and Pennsylvania Rubber Co. Ohio Rubber Co. states also that A. B. Schultz and Budd Bronson are no longer with it; no other changes in personnel are contemplated at this time.

Goodrich Notes

Workers in the engineering and miscellaneous departments of The B. F. Goodrich Co., Akron, just completed the first month in history without a lost time accident. At midnight May 31 they hoisted a huge banner proclaiming that fact and urging continuance of the effort during June in a final drive to capture the John Noonan safety trophy, another award of which will be made in a month. The mechanical goods department now has the trophy.

Arthur W. Carpenter, manager of the Goodrich testing laboratories, represented his organization at the 35th annual convention of The American Society for Testing Materials in Atlantic City, N. J., June 20. He is secretary of the rubber products committee of the national organization.

Alice M. Bridge, one of the veteran Goodrich employes, was retired on pension June 1. Miss Bridge, for years rated as one of the most expert builders of gun recoil pads in the rubber industry, started with Goodrich about 1890. She left after several years. Her continuous service record dates from July 24, 1913.

Combined total length of all rows of vegetables to be planted on the Goodrich industrial cooperative farm of 275 acres near Old Portage will be about 6,000,000 feet or more than 1,000 miles. This garden, believed the largest in operation by any industry in the country, is designed to provide foodstuffs for the winter for families of former workers and for those employed on a part-time basis.

About 100 members of the Goodrich mechanical sales department held their annual picnic at the Turkeyfoot Island Club, June 9. Water and other sports and a dinner dance were features of the day. B. J. Brooks was chairman of the committee.

Several hundred workers in the engineering and miscellaneous departments of the Goodrich and Miller organizations staged their fourth annual golf tournament and picnic at Loyal Oak, June 11. A wide variety of other games and entertainments were enjoyed. C. T. Butler was general chairman.

Emilio Allenspach, president of Cia. Tecnica y Mercantil of Mexico City, Goodrich distributers for the Republic of Mexico, and J. J. Figueroa, of Figueroa & Cautier, San Juan, Puerto Rico, Goodrich distributers for Puerto Rico, were visitors at the Akron offices of the International B. F. Goodrich Corp. last month.

A. Schulman, Inc., rubber dealer and manufacturer, with main office in Akron, and branches in New York, N. Y., and Chicago, Ill., has expanded its business to include a new line of Freshman balloon tires and tubes.

Goodyear Tire & Rubber Co., Akron, reports that Secretary W. D. Shilts recently sailed from Vancouver, B. C., Canada, for a 6-month visit to branch organizations in New Zealand, Australia, Java, Singapore, and India. Fred L. Morgan, with Goodyear 17 years, resigned June 1 as sales manager of the automobile tire department to join the Western Auto Supply Co., Kansas City. General Superintendent William Stephens is suing the Independence Indemnity Co. for $1,328 for indemnity for a broken arm and continued partial disability resulting from a fall in the ballroom of the Waldorf-Astoria Hotel, New York, N. Y., where he attended the Rubber Manufacturers Association dinner in January.

India Tire & Rubber Co., Akron, has announced a 33⅓% addition to its working force through the adoption of 4, 6-hour shifts 7 days a week. President W. G. Klauss stated that this schedule has resulted in improved attendance, efficiency, and employe satisfaction; so it has been extended to all divisions of the India factory where possible.

"With the recent increase in our production schedules it has been necessary to operate many departments 7 days a week. Men on a 6-hour shift, 7 days a week, receive a sufficiently large income; so there is no hardship," declared Mr. Klauss. "In fact with the lower commodity prices this income is equivalent in purchasing power to wages made in previous years."

The Faultless Rubber Co., Ashland, in accordance with its usual custom is reserving the first 2 weeks in July for annual inventory, general repairs and inspection of factory machinery and equipment, and for factory personnel vacations.

Better Rubber Co., 910 S. Main St., Akron, handles dipped rubber goods, druggists' sundries, and novelties. C. M. Grandy is president and purchasing agent.

The Harrison Tire & Rubber Co., 12th and Central Parkway, Cincinnati, handles tires, tubes, mechanical rubber goods, boots, and golf balls. Company officers are: Charles H. Schwegman, president; C. F. Schwindt, vice president; John S. Schvenharl, secretary; Lawrence R. Smith, treasurer; and E. C. Pinel, purchasing agent.

NEW ENGLAND

Claremont Waste Mfg. Co., Claremont, N. H., through President Samuel Steinfield has announced its recent purchase of the flocks manufacturing business of Smith & Cooley, Stafford Springs, Conn., making the Claremont company the largest flock manufacturer in the United States. The manufacture of cotton, wool, and rayon flocks formerly conducted at the Smith & Cooley plant has been transferred to the New Hampshire location. The Claremont organization now produces a large and varied line of flocks in cotton, wool, and rayon, both in natural and dyed states, and is in a position to manufacture any grade required by the trade including makers of rubber soles and heels, mechanical goods, and coated or velour fabrics.

E. H. Clapp Rubber Products Co. and **E. H. Clapp Rubber Co.** on May 23 moved their general office to Hanover, Mass.

Converse Rubber Co., Malden, Mass., by Judge W. D. Gray, Middlesex Superior Court, on June 15 had appointed to it as receivers to continue the business Thomas H. Mahoney, Samuel R. Haines, and Albert H. Wechsler. Joseph Beal & Co., the petitioner, declares Converse, which manufactures footwear, is near its busy season, and orders on hand near completion make it solvent if it is allowed to continue. The company has 17,744 shares of stock, par $33, and 57,232 shares common, no par value. It has $75,000 in a closed bank now being liquidated. Liabilities are reported to be over $450,000 and quick assets over and above liabilities of about $325,000, excluding equity in land, buildings, and equipment. Converse has on hand finished articles and raw materials valued at $800,000; while the plant, machinery, and real estate are valued at more than $900,000.

The L. W. Ferdinand Co., a waterproofing concern, has purchased a factory at E. Canton and Albany Sts., Boston, Mass., and will begin operations immediately.

Carr Mfg. Co., Bristol, recently was incorporated in Rhode Island with a capitalization of $100,000 to manufacture rubber products. Incorporators are Edward M. Boyle, Francis R. Foley, and Martin M. Zucker, all of Pawtucket, R. I. A new building, the main part one-story brick 304 by 66 feet with a wooden L section 334 by 21 feet, and a one-story structure, 106 by 29 feet, for use as boiler and vulcanizing room are now under construction on Franklin St.

Phillips-Baker Rubber Co., 44 Warren St., Providence, R. I., will erect a 2-story, 40 by 115 feet plant addition.

The Columbia Narrow Fabric Co., manufacturer of elastic webbing, Shannock, R. I., installed a new water wheel and turbine at a cost of about $15,000. The mill has discontinued its night work and is now on a 2-shift basis.

American Electrical Works and **Washburn Wire Co.** suffered loss by fire of their salvaging department shed, Phillipsdale, E. Providence, R. I. The damage was relatively slight, though, for the shed had not been used for several months.

United States Rubber Co. golf ball division, Providence, R. I., has continued in full force without interruption during the past 2 years and is expected to make more golf balls in 1932 than it had the year before. The latest design by the company is the Pro-Royal, with which, it is claimed, more distance can be made than with any other ball. The Valley St. plant of the Providence division of U. S. Rubber, operated as a branch, will be consolidated with the National India Rubber Co., Bristol, R. I., and both be known under that name. No change will take place, however, in the operations of the 2 units. H. W. Waite, general manager of the Providence druggists' sundries department, has been transferred to the Latex Fibers Industries, Inc., division, New York, N. Y. C. W. Rehor, factory manager of the Providence plant, will continue in that position after the merger. The National India Rubber Co. recently applied to the Secretary of State for permission to increase the capitalization from $1,500,000 to $3,000,000 by issuing 30,000 shares of stock at $100 par value each.

Sanford Mills, Sanford, Me., has taken over L. C. Chase & Co., Boston, Mass., a textile selling house, which, on May 1, following incorporation as L. C. Chase Co. became a division of the Sanford Mills. The firm had been a partnership selling for Sanford Mills, Troy Blanket Mills, and Reading Rubber Co. Reports indicate that headquarters will be in New York, N. Y.

PACIFIC COAST

Rubbercraft Corp. of California, Ltd., 110-14 E. 17th St., Los Angeles, Calif., through President Charles N. Merralls, has announced the appointment of James W. Stull as factory chemist and production manager of the company's Torrance plant. Mr. Stull, a graduate in chemistry at Columbia University, has spent 15 years with 2 major rubber companies. Several new sponge rubber products are now being manufactured under his supervision at Torrance. Mr. Merralls reports slightly improved business conditions on the Pacific Coast and that his company's Oso-Soft pneumatic air cushions and mattresses continue to enjoy increased sales in the 269 stores of the Western Auto Supply Co. throughout the United States as well as in a broad foreign market. Roy R. Musser is Rubbercraft secretary and treasurer.

Charles N. Merralls

California Rubber Manufacturers Association, 112 E. 17th St., Los Angeles, was formed to create freer and more businesslike relations between the various rubber manufacturers on the Pacific Coast. Members and their business affiliations include President Charles N. Merralls, Rubbercraft Corp. of California, Ltd.; Secretary-Treasurer J. C. Ballagh, Patterson-Ballagh Corp., Ltd.; Mr. Clark, D & M Machine Works; J. B. Horan, Pioneer Rubber Mills; E. A. Richards, Oliver Tire & Rubber Co.; Walter Smith, E. M. Smith Co.; Wm. Voit, Voit Rubber Co.; T. Kirk Hill, Kirkhill Rubber Co.; Douglas Radford, West American Rubber Co.; and Herbert King, Pacific Hard Rubber Co.

Super Mold Corp., with factory at Lodi and branch at 1249 S. Figueroa St., Los Angeles, both in Calif., lists as its products remanufactured tires; Supertreader, a tire retreading mold; and pumps. Company officers are W. B. Thurman, president; H. J. Woock, vice president; and G. O. Beckman, secretary.

The Pacific R & H Chemical Corp., El Monte, Calif., subsidiary of The Roessler & Hasslacher Chemical Co., New York, N. Y., and one of the largest manufacturers and distributers on the Pacific Coast of liquid HCN and cyanides for fumigation and also manufacturer of reclaimed rubber, at a recent meeting of the directorate elected the following: C. K. Davis, chairman of the board; Dr. E. A. Rykenboer, president; F. S. Pratt, vice president; A. Frankel, treasurer; H. A. Schumacher, assistant treasurer; L. Rice, secretary; and J. L. Fahs, assistant secretary.

Pacific Goodrich Rubber Co. has appointed B. C. Smith, former retail supervisor, Denver, Colo., district advertising and promotional manager, and R. W. Mosena, Denver district operating and credit manager. The latter was general credit manager on the Pacific Coast for the Miller Rubber Co. and at one time also was with the Firestone Tire & Rubber Co. in Chicago. A. W. Phillips, foreman of the milling, calendering, and inner tube departments of the Pacific Goodrich company, Los Angeles, Calif., recently completed a remarkable cross country trip, traveling the 2,830 miles between Los Angeles and Akron, O., in 96 hours elapsed time. The car consumed about 279 gallons of gasoline and 20 quarts of oil. There was only 50 miles of the route where high speed was not possible. Several principal cities were touched in the South- and Midwest.

OBITUARY

Veteran Tire Executive

DEATH came to H. L. McClaren on June 6 at his home in Sea Isle City, N. J. Last year, following the reorganization of the Ajax and McClaren rubber companies, he resigned as their president and retired from active participation in the rubber industry.

The deceased was born in Pana, Ill., 55 years ago. Not satisfied with reporting court proceedings as stenographer, he became salesman in Chicago, Ill., for Morgan & Wright, bicycle tire manufacturer. He later was appointed manager of the San Francisco, Calif., branch, but was recalled to Chicago as district sales manager of the United States Rubber Co., which had absorbed Morgan & Wright.

In June, 1912, Mr. McClaren was elected vice president and sales manager of the Racine Rubber Co., Racine, Wis., winning the presidency in January, 1914. From 1914 to 1917 he served as president also of the Mitchell Motor Car Co. When the Ajax Rubber Co., Inc., New York, N. Y., purchased the Racine firm in 1917, he was made vice president and sales manager of the New York concern.

He resigned those positions in 1919 and secured a substantial holding in the J. & D. Tire Co., Charlotte, N. C., becoming president and general manager. The company was renamed McClaren Rubber Co. in his honor. With the merger of the Ajax and the McClaren companies in 1928, Mr. McClaren, returning to Racine, became also Ajax president and general manager.

For several years he was, too, a director of the Rubber Manufacturers Association.

H. L. McClaren

Wire Superintendent

SAMUEL LITTMAN, superintendent of the American Insulated Wire Co., Providence, R. I., died May 2 at Miriam Hospital, Providence, following an appendicitis operation. Born in Russia on July 14, 1891, he came to New York as a boy. For the past 5 years he lived in Providence. He leaves his wife, 2 daughters, a sister, and 5 brothers.

Firestone Sales Manager

WHEN his automobile was struck by a fast moving train near Fremont, O., on May 26, death came to Charles H. Gerhold, 51, division sales manager, mechanical rubber goods department, Firestone Tire & Rubber Co., Akron, O. He had been with the company a quarter century.

He was born in Indiana, but his parents moved to Mogadore when he was a year old. He was an enthusiastic golfer and belonged to the Fairlawn Heights Golf and Akron City clubs.

Funeral services were held at his residence on May 28, and burial was in Mogadore Cemetery. Prominent Firestone executives acted as pallbearers. Surviving Mr. Gerhold are his widow, a daughter, a son, and a sister.

Robert E. Tyson

Henry Fera

Frank W. Thropp

FRANK W. THROPP, 59, of Trenton, N. J., president of the Eureka Flint & Spar Co., and one of Trenton's prominent businessmen, died May 27 at his home, Morris Heights, Pa. He had been in poor health for the past 5 years and was retired from active business most of that time. He was also a member of the firm of DeLaskie & Thropp, manufacturer of tire making machinery, and formerly had been secretary of John E. Thropp & Sons Co.

Mr. Thropp was one of the founders of the Gethsemane Baptist Church, of Trenton. He belonged to its official board, the Knights Templars, and the Masonic fraternity.

He is survived by his widow, a son, and 2 daughters. Burial was in Riverview Cemetery, Trenton.

President of Tyson Bros.

TYSON BROTHERS, INC., manufacturer of rubber substitutes and chemicals, Woodridge, N. J., suffered an incalculable loss on April 30 when its president, Robert E. Tyson, died at his residence in Westfield. Mr. Tyson, who organized the business in 1905, which in 1909 was incorporated under the laws of Connecticut, served most efficiently as president since that time.

He was born in Chapmans, Pa., October 30, 1874. From the public schools he went to Lafayette College, Easton, Pa., and then to Penn State College, from which he was graduated an M.E. in 1896. His first position was with E. W. Bliss Co., Brooklyn, N. Y., followed by his employment as engineer and designer of rubber mill equipment for Birmingham Iron Foundry, Derby, Conn.

Mr. Tyson was a member of the American Society of Mechanical Engineers, King Hiram Lodge, F. and A. M., Derby, Conn., and the Rahway Lodge of Elks.

Faber General Manager

AT THE home of his brother Walter, 251 W. 92nd St., New York, N. Y., with whom he had been living since he suffered a stroke while in Europe with his daughter Theodora in 1928, Henry Fera died on June 18. Since 1911 he had been general manager of A. W. Faber, Inc., manufacturer of stationers' rubber goods, Newark, N. J., under the regimes of both the alien interests as well as the present American owners.

Mr. Fera was born in Hoboken, N. J., September 1, 1880. He was educated at public and private schools in New York.

Funeral services were held at Mr. Fera's late residence, at which Dr. Call, of Community Church, officiated on June 20. Interment was at Mt. Hebron Cemetery, Montclair, N. J.

Surviving are his daughter, 4 brothers, and 5 sisters.

Veteran Superintendent

OSCAR W. LUNDGREN, for 25 years superintendent of the Washburn Wire Co., Phillipsdale, E. Providence, R. I., died in May after a 2-week illness. He was born in Sweden 57 years ago and came to this country when young. He was educated in the public schools of Worcester, Mass., and was graduated from the Worcester Polytechnic Institute.

He belonged to the Providence Engineering Society and the Good Fellowship Club of the American Electrical Works and Washburn Wire Co. Surviving are his widow, 3 sons, 5 daughters, 10 grandchildren, and a brother.

Northwest Executive

ON MAY 22 in Portland, Ore., died Charles Roger Griffith, president of Griffith Rubber Mills, manufacturer of rubber covered rolls and special mechanical goods, Portland. He was also president of Portland Associates, Inc., an oil concern, and for many years prior to his death was more active in the oil industry of Wyoming and Montana than in rubber.

He and his brothers owned and operated the American Rubber Mfg. Co., Emeryville, Calif., in the early years of the century. When Mr. Griffith came to Portland several years later he organized the American Belting & Hose Co., but changed its name in 1927.

The deceased was born December 7, 1874, in Minneapolis, Minn. The Dental College, San Francisco, Calif., is his Alma Mater. He was a Spanish American War Veteran, Scottish Rite Mason, and member of the Portland Chamber of Commerce, Multnomah Athletic and Portland Golf clubs.

Surviving are his widow, Laura Pope Griffith, secretary of the mills; a sister, Minnie Oliver, head of the Oliver Tire & Rubber Co., Oakland, Calif.; and a brother, Franklin T. Griffith, president of Pacific Northwest Public Service Co.

The Canadian General Rubber Co., Ltd., Galt, Ont., through President and General Manager E. Barringham, has announced that following its 4-year affiliation with the Hayes Wheels & Forgings, Ltd., Chatham, Ont., they have recently formed a sales division, The Hayes Products, Ltd., 179 King St. W., Toronto, a holding company, to co-ordinate their sales activities along with those of The Sonora Radio Co., Ltd., and The O. & W. McVean Co. The products handled by these companies follow: Canadian General Rubber: automobile topping, raincoating, hospital sheeting, soles and heels, tubing, aprons, table covers, baby pants, crib sheets, bathing caps, balls, nipples, soothers, balloons, household gloves, etc.; Hayes Wheels & Forgings: electric refrigerators and high transmission line hardware and equipment; Sonora Radio: radios; O. & W. McVean: hockey sticks, shafts, wheels, and small wooden ware. Mr. Barringham has moved his offices to the Toronto address.

NEW JERSEY

Tire production in some New Jersey plants has increased; while in others it is below normal. The new federal tax on tires little affected buying, and dealers were disappointed. Production of jar rings remains good, but orders for mechanical goods have decreased. Manufacturers say production of rubber shoes and heels is normal. Plants making rubber cloth for automobile tops and raincoats are experiencing a dull season.

Rubber Manufacturers' Association of New Jersey held its annual outing and dinner at the Trenton Country Club on June 17. All rubber concerns in Trenton and many from other parts of the state were represented. The afternoon and early evening was devoted to golf. John A. Lambert, treasurer of the Acme Rubber Co., Trenton, is president of the association, which will not meet again until the Fall.

Murray Rubber Co., Trenton, recently put on a night shift and engaged more employes to fill increased orders for tires and tubes. Murray now competes with mail order houses by handling batteries and oil in containers and has already won some business in that market. The company recently held a "pep" meeting at the Trenton offices for its salesmen, and men were called off the road to attend it; then salesmen representing the company from Maine to the Pacific Coast started out again with new sales plans. Leslie Broomfield is advertising manager.

Pierce Roberts Rubber Co., Trenton, reports increased business during the past few months.

Pocono Rubber Cloth Co., Trenton, announces declining business, which is customary this time of the year.

Joseph Stokes Rubber Co., Trenton, finds business has increased at both its Trenton and Welland, Ont., Canada, plants.

Whitehead Bros. Rubber Co., Trenton, is operating normally on mechanical goods. Its rubber shoe department continues busy.

Acme Rubber Mfg. Co., Trenton, is busy in the jar ring departments; while orders for other goods have dropped off. Superintendent J. Edward Myers has been selected on one of the teams to solicit funds for the Trenton Y. M. C. A.

Reuter Rubber Co., 567 E. 41st St., Paterson, manufactures self-repairing puncture proof automobile inner tubes under the Reuter patents. Company officers are G. J. Reuter, president; Virgil Kieps, vice president; Harry B. Oakes, secretary; and Nathan Schwartzer, treasurer.

The Neptune Rubber Mfg. Co., manufacturer of bathing caps, swimming tubes, gloves, mats, matting, etc., is moving its main office and plant from Irvington to Trenton, where operations will start some time in July. Seth R. Milbury is owner.

The Thiokol Corp., Yardville, on June 16 tendered to a party of 20 or more New York press representatives a demonstration at its plant of the manufacture of Thiokol, a new plastic rubber-like material with exceptional oil, solvent, and age resisting properties. This material is not synthetic rubber nor a rubber substitute, but a new plastic material product chemically formed in the laboratory and possessing unique physical properties of great industrial promise.

The Vant Woud Rubber Co., 189-193 Washington St., Jersey City, manufactures druggists' rubber goods and specialties.

F. Robert Lee, vice president of The Thermoid Company, Trenton, was on a lengthy business trip through the West. Plant output has not changed.

The Laurel Co., Garfield, through Edgar Josephson has announced a new product, "Kant-Kink," for telephone wires and electric cords. This invention consists of 4-foot spiraled lengths of ½-inch wide rubber to wind over such wires to prevent them from snarling or tangling.

Essex Rubber Co., Trenton, which had been very busy, states orders have declined the past few weeks. Officials, however, are optimistic over future business.

Combination Rubber Co., Trenton, reports a drop in tire and tube production.

Mercer Rubber Co., Hamilton Square, is encouraged over an activity in orders from traveling representatives. Vice President and Treasurer I. Ely Reed, has been named captain in the Hamilton Township campaign for the unemployed.

Ford Industrial Co. of Brazil. The first shipment of commercial products from the Ford plantation at Boa Vista, Brazil, consisting of kiln-dried lumber, rubber, plant fiber, and tropical oils, arrived June 21 at Hoboken, N. J.

Committee D-11, A.S.T.M.

At its annual meeting in Atlantic City, N. J., on June 21, American Society for Testing Materials, Committee D-11 on Rubber Products, chose as its chairman for the next 2-year period, Harlan A. Depew, of the American Zinc Oxide Co. C. R. Boggs, vice president of the Simplex Wire & Cable Co., was reelected vice chairman of the committee, and Arthur W. Carpenter, of The B. F. Goodrich Co., was continued as secretary. The committee will hold its next meeting at New York in March, 1933, in conjunction with the spring group meetings of A.S.T.M. committees.

In a Composition for Preserving Eggs 500 parts of raw rubber are used, with benzene 10,000, carbon bisulphide 2,000, naphtha 10,000, sulphur 70, solid paraffin 500, and active essence of derris root 200 parts.

EASTERN AND SOUTHERN

Titanium Pigment Co., Inc., New York, N. Y., moved from 60 John St. to 111 Broadway.

Vulcanized Rubber Co., Morrisville, Pa., reports unchanged business lately. The company is running normally on hard rubber combs.

Castle Rubber Co., E. Butler, Pa., recently installed a special metal treating plant which allows the company to handle business where the adhesion of rubber to metal is essential.

Rubber Latex Laboratory

Probably the first and only chemical laboratory of its kind was recently installed by Charles E. Wood, Inc., 21 West St., New York, N. Y., direct importer of crude rubber, 60% and 38% liquid rubber latex. The laboratory, located at 33 35th St., Brooklyn, N. Y., occupies several thousand feet of floor space and is completely equipped for all types of latex research and the development of latex materials and solutions.

Special emphasis will be given to the development of latex solutions for the rubber industry.

Charles E. Wood, president, although actively engaged in the importation of crude rubber for the past 38 years, has been especially interested in latex since 1924. For several years, on his annual trip abroad, Mr. Wood has taken the opportunity to observe the latest developments in latex technique and equipment as practiced in Germany and England. In designing his laboratory Mr. Wood has included all of the best features and equipment noted on his travels.

In addition to his own investigators, Mr. Wood has retained George D. Kratz, consulting chemist, 250 W. 57th St., New York, as a consultant on latex problems. Mr. Kratz has a background of over 20 years' experience in rubber and latex.

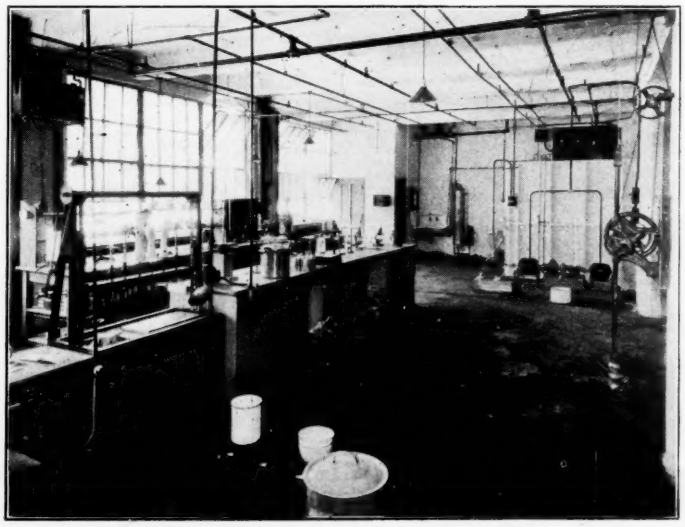
The Goodyear Tire & Rubber Co., Birmingham, Ala., after a month's steady activity, turning out tires and tubes to capacity, taking a lead on the new revenue tax of the Government, effective last month, is back on the 5 days' schedule. The Dixie plant is capable of producing upward of 6,000 tires daily. Thirty-five thousand tires were moved in one day last month. The warehouse stock at the plant now is low.

D.B.M. Chemical, Inc., Second St. and Roslyn Rd., Mineola, N. Y., through General Manager T. R. Dabe has announced that its new product, Leuco, a specially prepared cleaner for preserving or reviving the original whiteness of white sidewall tires, is rapidly winning public favor. It is said that this preparation not only cleans white sidewalls but also eliminates the yellow tint that mars the appearance of the tire.

Mimex Co., Inc., 6 E. 46th St., New York, N. Y., supplies colloidal zinc oxide and colloidal sulphur in the form of pastes containing 50% of solids, which are miscible with latex without coagulation of the latter and are said to be greatly superior to dry powder in latex processing. J. H. Haines is Mimex treasurer.

Yellin Rubber Co., Inc., Pierce and Ninth Aves., Long Island City, N. Y., of which Harry Yellin is president and treasurer, rubberizes fabrics.

Armstrong Cork Co., Lancaster, Pa., has added to its types of flooring rubber tile in 21 colors made in 3/16- and ¼-inch gages. This tile, a homogeneous product consisting of pure plantation rubber, is processed to resist the effects of the ultra-violet rays of the sun. A complete line of specialties, such as plinth blocks, cove and base, borders, corners, thresholds, etc., also is offered.



The Charles E. Wood Chemical Laboratory

Blank & Stoller, Inc.

Charles T. Wilson

Well-Known Rubber Man

Charles T. Wilson has been a familiar figure in the crude rubber industry since 1906 when he first became interested in guayule rubber. He spent several years in exploiting the product to American manufacturers and finally, in 1911, turned to the importation of plantation rubbers, the business in which he is still engaged. The growth of the Charles T. Wilson Co., Inc., from its organization in 1914 was rapid. Shortly after the outbreak of the World War when the rubber embargo was placed by Great Britain, Mr. Wilson was called in to serve as chairman of the Rubber Advisory Committee of the then Rubber Association of America. This committee kept constant contact with the British authorities in the matter of the importation and distribution of crude rubber. When the United States entered the war, Mr. Wilson became chairman of the Crude Rubber and Kindred Products Division of the Rubber Association, that functioned under the supervision of the War Trade Board. He was also a member of the War Service Committee of the Association and served as a director of this body for various terms aggregating 6 years.

In addition to directorships in various companies he is a director of the Rubber Trade Association of New York and a Governor of the Rubber Exchange. He is a past president of the Rubber Trade Association. Mr. Wilson was born in Houston, Texas, in 1879, received his education in public schools, and engaged in the bicycle business before he entered the rubber industry.

Prince Rubber Co., 885 Niagara St., Buffalo, N. Y., is a wholesale distributer and jobber of mechanical rubber goods. Sidney W. Prince is president, and W. R. H. Wood, purchasing agent.

C. E. Boone and **Michael Levin,** Baltimore, Md., well-known chemists and technologists, formerly with the Bureau of Standards, Washington, D. C., have opened a consulting laboratory for the rubber industry specializing in latex problems, at 2431 Lakeview Avenue. Messrs. Boone and Levin are both eminently qualified for the work they will undertake.

Baumgarten & Co., Inc., 111 W. Fayette St., Baltimore, Md., manufactures Excelsior rubber printing sets and dies. Officers are: A. Kaufman, president and purchasing agent; J. W. Baumgarten, vice president and secretary; and A. B. Carroll, treasurer.

Pollack Bros. Scrap Rubber Corp., 228-38 Newport St., Brooklyn, N. Y., manufactures all kinds of specialties made of scrap rubber, tires, and tubes. The company also handles scrap for reclaiming purposes and for making blowout patches and reliners. Aaron Pollack is president, and Morris Pollack, treasurer.

Vadsco Sales Corp., 51-02—21st St., Long Island City, N. Y., handles adhesive plaster, hot water bottles, fountain syringes, etc., made under such trade marks as A. P. C., A. D. S., and Rex Service. The company maintains branches at 1026 S. Los Angeles St., Los Angeles, Calif.; 421 E. Illinois St., Chicago, Ill.; 624 King St. W., Toronto, Canada; and 77 O'Reilly St., Havana, Cuba. Company executives include T. J. McHugh, president; M. W. Rothschild, vice president; P. E. Fulcher, secretary-treasurer; and J. M. Jaffin, purchasing agent.

The Barrett Co., with factory at Frankford, Philadelphia, Pa., main office at 40 Rector St., New York, N. Y., and branches in Cleveland, Cincinnati, Chicago, Detroit, and St. Louis, includes among its products the following for the rubber industry: coal tar, rubber compounds, and benzols.

International Management Committee of the U. S. A., 29 W. 39th St., New York, N. Y., reports that the Fifth International Congress for Scientific Management will be held in Amsterdam, Holland, July 18 to 23, 1932, when exponents of scientific management from 18 countries will exchange ideas on the relation of its principles to budgets and cost methods, selection, training, promotion, and remuneration of personnel, production and marketing, etc. This congress, under the auspices of the International Committee of Management Congresses, follows those in Prague, 1924, Brussels, 1925, Rome, 1927, and Paris, 1929. The following organizations from this country will participate: The American Management Assn., The American Society of Mechanical Engineers, the Taylor Society, the Society of Industrial Engineers, the National Assn. of Cost Accountants, the American Home Economics Assn., and the American Society of Agricultural Engineers.

American Washer Works, 59 Bond St., New York, N. Y., of which W. H. Bunnell is proprietor, manufactures washers, gaskets, and stamping.

Crest Mfg. Co., Inc., 4-63 48th St., Long Island City, N. Y., handles plumbers' rubber specialties including Crestbal tank balls and bulbs and Heat-Pruf faucet cushions and washers. Officers are B. E. Goesler, president; R. N. Whiltey, vice president; and A. Le Tarte, secretary-treasurer and purchasing agent.

MIDWEST

Sam'l Bingham's Son Mfg. Co., 636 Sherman St., Chicago, Ill., manufactures printers' and litho rollers. Company officers are Carl G. Bingham, president; Leo D. McShane, vice president and purchasing agent; and C. F. Peterson, secretary.

The Bon Dee Golf Ball Co., Beard and Chatfield Ave., Detroit, Mich., deresinates balata for all purposes. The company supplies wound golf ball cores and covers ready for assembling, also cover stock, and makes private brand golf balls to order.

LaCrosse Rubber Co., LaCrosse, Wis., has announced that Chester D. Rudolf has joined its staff as factory manager. He formerly had charge of the Beacon Falls Tennis Shoe Department of the United States Rubber Co.'s mill at Naugatuck, Conn., and for many years prior to that connection had been superintendent of the Beacon Falls Rubber Shoe Co.'s plant.

Van Cleef Bros., Chicago, Ill., reports remarkably large sales of its new golf ball, the Van-Ite, which retails at a very low price.

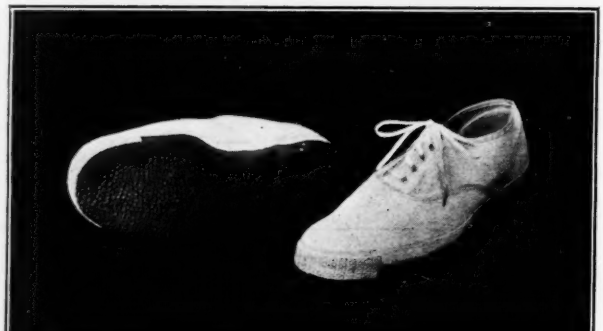
L. M. Bickett Co., Watertown, Wis., manufactures stair treads, landing and sink mats, hose, tubing, mechanical rubber goods, Cushionair seat cushions, etc. Officers include L. M. Bickett, president; Connell, secretary-treasurer; and T. I. Scanlan, purchasing agent.

Watson Rubber Stem Tube Co., Rector Bldg., Little Rock, Ark., with factory at Indianapolis, Ind., handles rubber valve stem inner tubes, rubber stem replacement units, and vulcanizing irons. Officers are J. A. Tiller, president; C. H. Wilkins, vice president; and W. E. Tiller, secretary-treasurer.

Keystone Rubber Co., Inc., 178 N. Wacker Dr., Chicago, Ill., manufacturer and distributer of general rubber products, is circularizing buyers and users of mechanical rubber goods with a double card listing Keystone products and advising readers to "Submit Your Rubber Problems to Us." Richard H. Geier is company president, and C. C. Bower, secretary-treasurer.

Japanese Tennis Shoes

RUBBER soled canvas shoes for vacation and beach wear made in Japan are being retailed in New York City at record low prices. The picture shows a pair of No. 8 men's shoes of light construction, weighing 17 ounces. The spring heel soles of vulcanized crepe rubber are the most substantial feature of the shoes. The style and the workmanship of these goods compare reasonably well with similar shoes of domestic make. However close factory inspection would class them as seconds in details of appearance.



Rubber Soled Canvas Shoes Made in Japan for United States Trade

The parts entering the construction are reduced in number and weight to the lowest terms consistent with reasonable speed in making up. This also facilitates service. The uppers are light duck to which is adhered unbleached twill as lining. The tongue is similarly made and lined. The heel counter is high and fairly stiff, of twill, rubber backed. The tongue and the edges of the upper around the shoe opening are bound with narrow white tape. Also the top edge of the counter is stitched to place and covered with narrow white tape, giving a neat finish. A white rubber foxing is vulcanized around the bottom of the shoe showing from 3/8- to 1/2-inch high. A narrow strip cut from calendered white rubber serves as a protecting toe cap for the foxing and sole to prevent loosening their union at that point.

One must conclude that this line of tennis forbodes ill for domestic made tennis to say the least.

Rubber Industry in Europe

GREAT BRITAIN

The Ro-Railer

The Ro-Railer[1] that was experimentally run by the London Midland and Scottish Railway in Stratford-on-Avon is now on a regular service between Welcombe Hotel, Stratford-on-Avon, one of the railroad's hotels, and Blisworth Station, on the main line from Euston to Holyhead, etc. The journey comprises about one mile on the road and about 30 on rail and is made twice daily. The *India Rubber Journal* reports that the Ro-Railer has a 6-cylindered engine of 110 b. h. p. The road-wheel track is 6 feet 3½ inches and the rail gage, 4 feet 8½ inches. Pneumatic tires on the front wheels are 32 by 6 inches, and on the rear wheels single 42 by 9 inches.

A 40-foot length of the ground is made up level with the rail tops. The vehicle then drives into position above the track and moves forward or backward off the raised ground level down ramps until the weight is taken by the rail wheels. The road wheels then are raised.

[1]See INDIA RUBBER WORLD, May 1, 1932, p. 75.

Window Channeling

A new type of rubber channeling, instead of being metal incased right up to the edges, is left free of its mounting on both sides or on the outer side alone. The rubber channeling is made with uneven edges so that it extends farther on the inside of the glass than on the outside. This construction provides a yielding frame for the glass, which, it is claimed, causes it to be forced out instead of being broken in an accident.

Dunlop Rubber Co.

In spite of adverse trading conditions, the Dunlop Rubber Co., Ltd., made a net profit of £480,029 in 1931 as against £541,424 in 1930. The financial position of the company is very strong; nevertheless it decided to omit the common stock dividend.

It is reported that Dunlop Plantations suffered a loss for which the parent concern will have to provide, as well as for the preferred dividends amounting to £112,550. The Dunlop Cotton Mills did better and paid a dividend to the main concern which holds all the common shares. The rim and wheel works showed reduced profits. The German, the American, and Canadian companies booked losses. The Japanese factory, however, showed profits greater than in 1930, and the Dunlop Perdriau Rubber Co. (Australia) made a profit over the year ending June 30, 1931. The Northern group of companies, chiefly engaged in the general rubber goods business, have been affected by the unfavorable condition in their lines, but 1932 is expected to show an improvement.

The company, trading the world over, finds that all international trade has become increasingly difficult because of lack of confidence, the heavy fall in commodity prices and consequent reduced buying power, exchange restrictions practically barring trade with many countries, and the failure to solve international political problems.

Company Notes

Good progress has been made in the reorganization of India Tire & Rubber Co., (Great Britain), Ltd., and the company now operates without loss. Financial arrangements with the Prudential Assurance Co., Ltd., and the company's bankers insure ample funds, but the large debit on profit and loss account necessitates an eventual reduction in capital.

The Stepney Tire Works, Walthamstow, which went into liquidation in December, has been taken over by the Stepney Tire & Rubber Co. The factory, which had been closed since the liquidation, is being reconstructed, and production is soon to start again. Among members of the board of the Stepney Company are Sir Hugh Dawson and Henry B. Potter, directors of the British Goodrich Rubber Co.

H. C. Young, formerly works manager of the Dunlop Rubber Co., Manchester, has joined the staff of the India Rubber & Guttapercha Co., (Silvertown Co.). Before assuming his new duties he left England on May 10 for a business tour in the eastern and midwestern parts of the United States and Southern Canada.

Dunlopillo, the cellular air cushion upholstery in complete units from molded, frothed latex, appears to be making good headway. A London omnibus company has used it for upholstering 250 new busses and it has also been ordered by the Birmingham & Midland Omnibus Co. for 50 vehicles. Use has been made of Dunlopillo for the entire seating arrangement of the new Shakespeare Memorial Theater.

Rubber Novelties

A thermoplastic rubber for use in decorating and modeling instead of gutta percha sheet has recently been put on the market.

The Fix-Firm is an adjustable elastic trouser support which does away with the need of belts, suspenders, etc. It comes in 3 qualities and 3 colors, gray, navy, and brown.

A waterproof slip-on armlet designed for motorists who may have to signal during rain, is called the Macarmlet.

GERMANY

New Elastic Weave

Attempts to give woven fabrics a knitted appearance and yet produce a woven effect in knit goods are prevalent in the elastic webbing industry. Naturally difficulties peculiar to this industry must be overcome: the weaving in of the rubber threads, the maintaining of the stability of the elastic fabric, and the elimination of various technical obstacles.

A member of the Wuppertal elastic band industry, however, after long continued efforts has, with the aid of special technical devices, succeeded in constructing a fabric which to a high degree exhibits the required properties. This material is a double-sided elastic webbing made on the ribbon loom and has a peculiar porous, yet strong and firm weave. It looks like mesh, but unlike knitted or braided goods, it cannot be stretched or pulled across its width. This article, being porous, meets modern hygienic requirements; therefore is superior to the usual closely woven types. The new weave may be used for all elastic goods as garters, suspenders, belts, corsets, bandages, etc.

New Processes

The Deutsche Hydrierwerke A. G. improves rubber goods by allowing all kinds of higher molecular monovalent aliphatic alcohols with more than 8 carbon atoms, the so-called fat and wax alcohols, to act on rubber and rubber masses. It is claimed that these alcohols have a softening effect on the mixings and protect the finished goods against aging; while under certain conditions they act also as accelerators. If rubber products subject to early deterioration, as jar-rings or reclaim compounds, are coated with a solution or liquid mixture of such alcohols, a film forms on the surface and prevents cracking and premature aging.

According to another recent patent colored hard rubber is produced by applying a colored surface, previously formed of colored rubber solution, to the ordinary black hard rubber. The whole is then pressed in molds in the usual way and vulcanized. In the process of vulcanization the colored solution unites so intimately with the rubber, that the product appears to be colored right through.

Company News

The Goodyear Tire & Rubber Co. is reported to be withdrawing from the German market because of unfavorable duties, exchange rates, and competition. Goodyear will stop selling until it again can compete more favorably with local manufacturers.

At the annual meeting of the Continental

Gummiwerke A. G. it was decided that the 6% dividend should be raised to 8%, as the year before.

The Hessische Gummiwaren-Fabrik Fritz Peter A. G., Klein Auheim, manufacturer of cycle tires, recently installed the most up-to-date machinery to increase its output which was fivefold in 1931 as against 1930. Over 500 employes have been working in 3 shifts. The economic conditions have little affected this concern. The loss of almost the entire export business was made good by developing domestic business. Sales for the first few months of 1932 were much higher than for the corresponding months of 1931. The company, capitalized at 400,000 marks, booked a profit of 21,206 marks and declared a 4% dividend.

The Harburger Gummiwaren-Fabrik Phoenix A. G. reports a loss of 1,317,606 marks for 1931. To cover the loss, the necessary amount was drawn from reserves, which are now 1,030,018 marks. The firm has a capital of 7,200,000 marks, and in 1930 netted a profit of 390,920 marks and declared a 4% dividend. The report further states that the constantly decreasing size of orders is causing difficulties in attempts to cut costs.

Sweden

About 60,000 tire casings were produced in Sweden in 1931, the combined output of the 2 leading Swedish rubber manufacturers: Svenska Gummifabriks A. B., Gislaved, and Trelleborgs Gummifabriks A. B., Trelleborg. The latter produced about 10,000 casings; the rest came from the Gislaved concern which has made particularly rapid headway in recent years. Whereas it produced 18,000 casings in 1929, the 1931 output is said to have been 50,000. The firm, having obtained a good foothold in the Swedish tire market, now seeks to develop its export trade.

Denmark

Among the few important rubber manufacturing firms in Denmark is the Akts. De Forenede Gummi & Luttringefabrike, Schionnig & Arve, 45-47 Hejmdalsgade, Copenhagen, which was established in 1896, with a branch in Odense, to import and manufacture all kinds of rubber articles. At present it produces chiefly technical rubber goods, and automobile and bicycle accessories. According to the 1930 report the company booked a net profit of 575,000 kroner against 637,000 in 1929.

The large Dansk Galoche & Gummifabrik, A. S., 13 Norregade, Copenhagen, is a joint stock company established in 1925 with a capital of 2,000,000 kroner. It is under the management of H. de Coninck Smit. In its factory at Koge, where 400 to 500 persons are employed, are produced various kinds of rubber goods. During the last 2 years the concern worked at a loss, which at the end of 1931 was 951,671 kroner, almost half the capital.

Technical and sanitary rubber goods are made by Aarhus Gummivarefabrik, 36, Rosengade, Aarhus, Jutland, Denmark. This joint stock company was started in 1929 with a capital of 20,000 kroner. E. Westphal is managing director.

Holland

The N. V. Irma Industrie en Ruwmaterialen Mij., Rotterdam, Holland, has patented a process to make brake linings according to the method used on the Continent for making It sheets for packing. The brake linings are cut from the sheets so that the fibers all lie in the direction in which the braking forces are applied. To obtain thicker linings several plies are superimposed and united by suitable binding agents. The linings are then molded and vulcanized.

France

In discussing L. E. Weber's method of testing fabric to determine the presence of copper, A. D. Luttringer, in *Le Caoutchouc et la Gutta-percha*, points out that the former has apparently overlooked the possibility that in striped or plaid fabrics copper may be present only in certain parts of the design. He cites the case of a fabric with a stripe 2 mm. wide occurring every 60 mm., which therefore represented only about 3% of the entire surface of the fabric. A copper content in this stripe of 0.02% would be dangerous, but this would work out at only 0.0006% of copper on 10 gr. of the whole, the testing amount advised by Weber, and would be considered negligible. Luttringer holds that if a test with 10 gr. of such striped or plaided fabrics shows traces of copper, the fabric should be rejected; and if a negative result is obtained, the test should again be carried out with those doubtful portions from the design or stripes. The presence of copper in these fragments should also cause the fabric to be rejected.

A new law modifies French customs duties on rubberized clothing, accessories (except those specified in No. 647 bis.), and other articles of woven or knitted elastic fabrics, in most cases a fixed amount per kilo being levied instead of the former *ad valorem* duties. Thus on sheet rubber dress shields the new duty is 30 fr. per kilo if they are covered with cotton, and 41 fr. if covered with silk; while those of rubberized fabrics pay 18% *ad valorem*, instead of the flat rate of 16% *ad valorem* for all 3 types; on suspenders, garters, belts, etc., it is 47 fr. per kilo if these are combined with silk, and 27 fr. if with cotton or wool, against 18% *ad valorem*. Stockings or socks for varicose veins, supports, and belts with gussets, pay 75 fr. per kilo if made with silks, and 45 fr. if with cotton or wool against 15% *ad valorem;* articles not specified above, 30 fr. per kilo instead of 16% *ad valorem*.

INTERESTING LETTERS

Timing Heel Molding

To the Editor: The article "Molds for Rubber Goods" on p. 45 in the "World" of March 1, 1932, I have found instructive, and am interested in the 3-piece mold for heels which is described as Figure 3. Can you inform me of the times for handling these molds.

May 3, 1932. Superintendent

Following are the times for handling the 3-piece boot-heel molds:

Questions	Answers
Open and unload press per mold	5 seconds
Open 3-piece mold	16 seconds
Strip 6 heels from mold	13 seconds
Lay down plate A	Not done
Place middle plate B on A	Included in third question
Spray interior of cavities	7 seconds
Load biscuits into cavities	12 seconds
Place follower plate on B	6 seconds
Load molds into press	2 seconds
Close press	2 seconds
Cure	10 minutes

The time for indirect labor has been prorated over each item.

The Editor

Elasticity of Gutta Hydrocarbon[1]

FILMS obtained from gutta percha hydrocarbon by very rapid evaporation of cold petroleum-ether solutions show white opaque spots surrounded by transparent areas. Those obtained from very slow evaporation of benzol solutions appear microscopically to be perfectly crystallized and consist of fine needles arranged in rosettes. Experiments with both types indicate that gutta percha hydrocarbon in a solid state has a lower density than when fluid, for when cooled it expands but contracts when heated, and the contraction is thought to correspond to melting. However tests with the dilatometer showed that gutta percha hydrocarbon expands when melted. It is therefore possible that the films consist of fluid crystals which undergo a change in form during expansion and that the films obtained by very rapid evaporation quite likely also contain rosettes of extremely fine needles.

[1] A. W. T. de Jong and J. A. Stol, *Rec. trav. chim.*, Vol. 50, p. 1011, 1931.

Solvent Naphtha 284

SOLVENT naphtha 284 is a more highly refined product than ordinary rubber solvent naphtha. It is made from a special Mid-Continent crude and cuts more rapidly and smoother than is usually the case; therefore the resultant cement has less viscosity and greater spreading quality. It reduces the tendency to poor adhesion in hot humid weather, makes the cement faster drying, and apparently shortens the time of curing. The distillation range is 50 or 60 degrees compared to a range of 165 degrees of some ordinary naphthas. Data from Anderson-Prichard Oil Corp., Oklahoma City, Okla.

Rubber Industry in Far East

MALAYA

Estate Production Costs

The vast majority of rubber companies report losses; those who made profits are few and far between; while such as can declare even a small dividend are rare indeed. The most drastic economies do not seem to enable the producer to keep ahead of the price. Before estates can benefit by a cut in costs, rubber again drops so that ways and means must be devised to meet the latest low level, but still the price of the commodity remains well below the average cost of production.

An informative analysis of production costs of 58 rubber companies, for the business year ended December, 1931, has been made by a Mincing Lane firm. Of these companies 51 record losses; while 7 made small profits. The output of the 51 companies, totaling 21,385 tons, was sold at the average gross price of 3.09 d. per pound, resulting in a loss of £219,190, which works out at 1.10 d. per pound, and added to the average selling price shows the average cost to have been 4.19 d. per pound.

The favorable position of the 7 companies which made a profit appears to have been due to good forward contracts, since the average gross selling price obtained on 2,914 tons of rubber was 3.88 d.; whereas the average price for the year was 3.12 d. On the basis of their combined profit of £11,452, which on the quantity produced works out at 0.42 d. per pound, their average cost must have been 3.46 d. The inclusion of these companies brings the average cost of production for all 58 at 4.10 d. per pound for a total output of 24,299 tons.

Of the 58 companies 37 were in Malaya, 31 of which showed losses, 6 a profit; while the output was 16,983 tons at an average of 3.87 d. per pound. There were 16 companies in Ceylon, all but one showing losses; their production was 5,211 tons and average cost, 4.47 d. per pound. The remaining 5 were in the Dutch East Indies, and all had losses. They produced 2,105 tons averaging 5.08 d. per pound.

Many of these companies received considerable sums in interest on securities, and since these amounts were not deducted when the calculation was made, the costs were actually somewhat higher. In spite of this condition, however, the analysis clearly demonstrates to what a degree companies have succeeded in reducing expenses.

Malayan Inventions

The slump appears to have had the effect of stimulating local inventiveness. Parry Davis, mentioned in these columns before in connection with the use of rubber for surfacing roads, is heard of again as the inventor of 2 new rubber preparations. One is Para-Coat, a wood preservative which, it is claimed, not only insulates against heat, cold, and electricity, but also keeps away white ants and all fungi, is weather and waterproof, germicidal, yet at the same time it preserves the pores of the wood. The product, said to be cheap, is made in 2 shades, light and dark.

The other invention, called Bitulast, is a rubber bitumen paint for bridges, iron work, steel structures, masonry, concrete, etc. Mr. Davis claims that it does not peel, chip, crack, or blister, and gives a black glossy finish.

V. K. Singhan, inventor of Singatex-crete and Singatex-phalt rubber pavings and Singatexoid rubber roofing for the tropics, recently demonstrated his Singatex-phalt mixture before the Governor, Sir Cecil Clementi. This material, made of liquefied and homogenized asphalt, Singhan's prevulcanized rubber paste, and fillers, can be used either as a grout for metal like tarmac, for plastering over metal to bond the surface, or to build up a cushion of rubber asphalt paving on top of roads treated as above, or on other road surfaces. In the latter case the preparation is spread in thin layers; each layer is allowed to set and then rolled with a heated roller, and the top is finished off in the usual manner with sand, etc. Singatex-phalt has been favorably mentioned in an English journal and it is being tested by the Rubber Research Institue of Malaya. According to Singhan, his mixture can be prepared and laid for 50 cents (Straits currency), a square foot.

Research in Malaya

The March, 1932, issue of the *Journal of the Rubber Research Institute of Malaya* contains some interesting items. The article, "Variations in Plantation Sheet Rubber," by R. O. Bishop and R. G. Fullerton, discusses the results of an examination of samples of smoked sheet exhibited at the Malayan Agri-Horticultural Exhibition in August, 1931. It is shown that in spite of all the knowledge possessed at present and all the work which has been done on the preparation of rubber of uniform quality, there is still very marked variability in the product of even first-class European estates. Thus the samples, obtained from 47 estates, showed decidedly high variation in thickness; while the variation in the rate of cure was 14, the average being between 80 and 90 minutes. If the values for maximum tensile strength at break indicate considerable uniformity, on the other hand, the variation in modulus is again high.

The investigators conclude that the proportion of serum, on which uniformity depends, must be reduced to a minimum or to a constant amount; they add that modern methods of estate factory practice provide means for accomplishing this.

"The Effect of Simple Carbohydrates on the Vulcanization of Rubber" is treated by R. O. Bishop and E. Rhodes. Simple sugars, each in the proportions of 1, 2, and 3% on the raw rubber, except galactose, for which the proportion was 0.5%, were added in crystalline state to a plastic mass obtained by incorporating 10 gr. of sulphur with 100 gr. of rubber on rolls at 60°. The addition of the sugar did not affect the mixing process, but it did in almost every case affect the rate of vulcanization so that the rate of fast curing rubber (slab) was retarded while that of a normally slow curing rubber (crepe) was accelerated. Similar results were obtained when aqueous solutions of the sugars were added to latex instead of to dry rubber.

The writers consider these facts important. It has been shown that sugars occur naturally in latex and that their amount may vary with the tree and the season.

Quebrachitol

During the last 3 years the Chemical Division of the Rubber Research Institute of Malaya has paid much attention to the non-rubber constituents of latex and the possibility of exploiting these constituents commercially. The progress made in this direction with quebrachitol is discussed by E. Rhodes and J. L. Wiltshire in an article "Quebrachitol—a Possible By-Product from Latex."

Quebrachitol, we learn, is separated from the residual serum from the normal coagulation of latex for sheet or crepe. The investigators treated about 2,000 gallons of dilute factory serum, obtaining a yield of 0.2% of pure quebrachitol. On the experience gained in the process they base a tentative scheme for manufacturing on an industrial scale. Figures supplied by them suggest that the cost of producing quebrachitol would probably work out at something like 85¢ (Straits currency) a pound. When on leave, Rhodes took some samples to England and with the help of Porritt, of the Research Association of British Rubber Manufacturers, succeeded in interesting a number of chemical manufacturers in the subject. Later on over 10 pounds of the pure quebrachitol were sent to Porritt who distributed it to various firms, at least 3 of whom appear to be keenly interested. In addition, 2 or 3 well-known scientific investigators have expressed interest in the chemical possibilities of the compound and have been supplied with small samples.

NETHERLANDS EAST INDIES

Proposed Java Factory

At present prices for sheet and crepe the estates in the Dutch East Indies are losing over a half million guilders every month, J. M. Burgers calculates in a recent article in *De Indische Culturen, Teysmannia.* Consequently, he inquires whether it would not be more logical and practical for companies to spend money on a project that would give returns—such as establishing a joint factory for making rubber goods in Java. The raw materials are there for the asking, so to speak, and markets include Australia, China, and even Europe because —he is convinced—rubber goods made in Java must work out much cheaper. He realizes that the failure of the Bandoeng Rubber Factory, started in Java many years ago, has had a discouraging effect on enterprise in this direction, but as he says, one failure does not mean that all such efforts are permanently doomed.

The costs of establishing a factory for making rubber flooring and the estimated production costs are given as well as a method for raising the necessary capital. Much of all this has a certain significance because it reflects a growing feeling, especially among the smaller, less fortunately situated estates, that producers can save themselves from ruin by working up in their own factories the commodity which at present they sell to manufacturers at a great loss, and thus divert to their own pockets the profits which now flow to the manufacturer abroad. As the writer puts it:

"Our rubber, which for the most part goes to America, to some extent comes back again in the form of automobile tires, shoe soles, etc., for which high prices are paid here."

Labor Adjustments

In their efforts to adjust themselves to present conditions some companies are laying the bases for new departures which may eventually have far reaching results. There is, for instance, the way in which certain companies in Sumatra are handling the coolie problem. In planning economies the companies must choose between dismissing large numbers of coolies brought from Java at great cost, with the risk of having to go through all the trouble and expense of recruiting and transporting labor again when necessary, or keeping their labor force together and thus again spend badly needed funds.

The Indische Rubber Co., which produced over 1,000,000 pounds of rubber in 1931, in its annual report for that year gives details of one way in which it has sought to solve this problem. In 1930 a colonization plan was started for coolies who did not wish to return to Java; it apparently is working satisfactorily. Under the plan the workers are allowed to settle on parcels of land allotted them by the company, but which remains the property of the company. On certain fixed days the coolies work for the concern and are paid accordingly, but on the days when they are not needed on the estate and consequently receive no pay, they attend to their plots of land on which they grow so-called secondary crops. Thus considerable wages are saved; while an added advantage is that when workers are required for full time, they are immediately available again and there is no need of importing coolies from Java. Already 200 men have contracted as above described, a result largely due to the fact that many workers prefer to stay on the estate where they have always worked instead of returning to Java where conditions are none too encouraging either.

Another aspect of the labor situation is noted in the trend toward employing free labor in preference to indentured coolies. Although wages for the latter have been lowered, free labor at present works out even much cheaper. In the Batoe Bahra district, in Sumatra, for instance, many companies are reported by the *Deli Courant* to be employing exclusively free labor to work on the estates for half a day for 25 guilder cents; then for the rest of the day they are free to attend to their own food crops. Such an arrangement has been adopted by the Tanah Datar estate of the Tanah Datar Rubber Estates Ltd.; Soengai Bedjangkar of the Asahan Rubber Estates Ltd., Tandjong Kassau and Tandjong Merah, of the Tandjong Rubber Co., and the Si Pare Pare estates of the Si Pare Pare Rubber Mij. It is further noted that the only estate to close in this district is a small Chinese owned plantation of 200 hectares.

In connection with the above changes it may be recalled that for many years prior to the slump the question of the abolition of the indentured labor system in Sumatra had been heatedly debated in the People's Council, the planting interests maintaining that exploitation in Sumatra could not progress satisfactorily without indentured labor. Is the slump now to effect in a short time what years of eloquent arguing and deep reasoning failed to bring about?

Estate Changes

We have previously mentioned that since the production of sheet rubber is more economical, many estates have stopped making crepe, leading to a comparative shortage so that at present rubber in crepe form obtains a premium over standard smoked sheet. This circumstance has undoubtedly dictated the policy of Tiedeman & Van Kerchem, which has decided to continue output as usual on estates where crepe is made, but proposes to cut output 75% on estates producing sheet.

The Rubber Cultuur Mij., Amsterdam, will reduce costs of estate supervision by combining 2 and even 3 estates under a single management. In all, 14 plantations are affected by the decision, and a number of assistants are to be dismissed. This company added 976 hectares to its planted rubber area in 1931, but no extensions are planned for 1932. On the contrary the concern has cut out certain areas to make place for oil-palms. Incidentally the Handelsvereeniging Amsterdam, well-known as the H. V. A., is said to have adopted a similar course. But to return to the Amsterdam Rubber Company, it was stated in these columns that this concern returned to the government 2 concessions covering 5,600 hectares; it is now learned from the annual report that a third concession, Serba, in East Coast Sumatra too, was also returned so that the total area of returned concessions comes to 9,078 hectares. Measures have, furthermore, been taken to hand back the concession Hapasoek.

Extravagant Administration

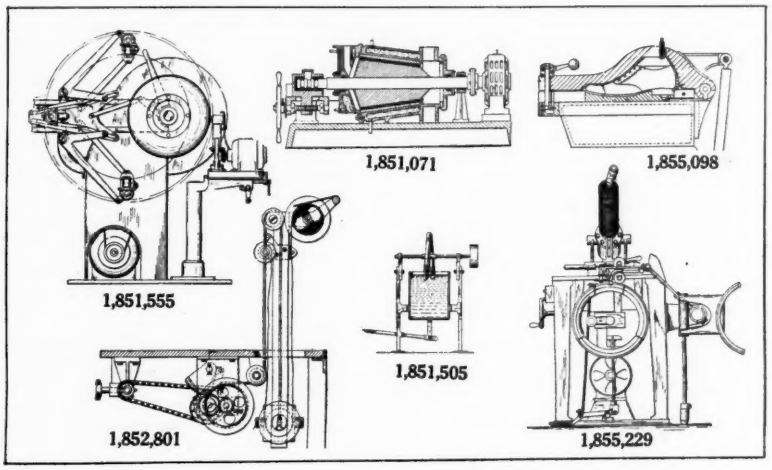
The administration methods of the Algemeen Landbouw Syndicaat, an organization representing the interests of estate owners, have lately been sharply criticized in the local press. The *Algemeen Landbouw-Weekblad* produced figures to prove its contention that the syndicate was costing too much money; that the experiment stations and also the offices were extravagantly run. It was pointed out that some time after companies began to discharge planters wholesale and to cut salaries drastically, the syndicate tardily announced a reduction in salaries of only 5%. A cabled report from Soerabaia indicates that this criticism is having the desired effect. A much less elaborate organization for the syndicate is planned, but the existing experiment stations are to be maintained. It is proposed to discharge 10 persons employed by the stations, to cut salaries there again, to prolong the period of service entitling employes to leave, and to reduce leave pay. The syndicate itself will introduce economies which should save over 200,000 guilders annually.

Abnormal Leaf Fall

In the *Bergcultures* a case is reported where *Phythophthora Faberi* caused abnormal leaf fall on mature areas of Hevea on an estate in Central Java. In most cases the attack was not serious, but in damper locations the attack was worse and was especially severe in one garden in which the morning sun never got a chance to penetrate. Here about 13% of the trees were almost completely denuded of their leaves; while on 65% of the trees the lower branches in particular were quite bare, and only 22% of the trees were normal.

Treatment by spraying with a suitable medium would probably have reduced the severity of the attack; however this work would not only have been expensive, but would have been practically impossible because of the extensive areas of large trees. The manager, therefore, must wait for drier and sunnier weather to bring relief from this new scourge which has never before been known to be so severe in Central Java.

Patents, Trade Marks, Designs



Machinery

United States

1,851,071.* **Dispersion Mill.** The object sought is to overcome the deficiencies of previous practice and to provide an improved dispersion mill utilizing the inherent advantages of feeding it at the small end and avoiding the undesirable effects of unduly rapid passage of the material through the mill. P. M. Travis, Ridgewood, N. J.

1,851,505.* **Hollow Ring Molds.** Swimming rings or circular life preservers can be molded on a helical or spherical mandrel or mold detachably mounted upon a revolving shaft. The lower portion of the mold is dipped into fluid latex to cover it completely to receive a uniformly thick wall deposit or it may be raised to increase the thickness of the wall of the periphery. J. R. Foley, New York, N. Y.

1,851,555.* **Carcass Reclaiming Machine.** The primary object of this device is to cut away the treads of defective or worn tires to enable them to be retreaded for further service as tires or to be made into tire reliners, tire boots, shoe insoles, etc. O. A. Wheeler, Portland, Ore.

1,852,801.* **Ribbon-Feed Mechanism.** This improvement is designed for supplying a ribbon of unvulcanized rubber to other mechanism by which such tapes are successively applied to the cut together seams of rubber articles made from unvulcanized sheets. A. E. Collins, Cuyahoga Falls, O., assignor, by mesne assignments, to Miller Rubber Co., Inc., Wilmington, Del.

1,855,098.* **Footwear Molding Apparatus.** In this apparatus partly prepared footwear is inserted in the 2-part mold where it is distended by inflation and cured. It permits a means for molding and vulcanizing a high-grade product without the need of a high degree of skill. C. H. R. Collins, Liverpool, England.

1,855,229.* **Tire Building Machine.** This flat band tire machine is equipped with a stitcher mechanism for binding the various plies together around the properly positioned bead. It is easily and simply controlled and operated and replaces all hand held tools. O. L. Flener, assignor to Firestone Tire & Rubber Co., both of Akron, O.

1,856,595. **Decorative Cloth Device.** J. Stein, Brooklyn, N. Y.

1,857,085. **Sponge Rubber Article Mold.** H. M. Hood, Chicago, Ill., assignor to Featheredge Rubber Co., Inc., a corp. of Ill.

1,857,987. **Wire Coverer.** D. F. Twiss and E. A. Murphy, both of Birmingham, England, assignors to Anode Rubber Co., Ltd.

1,857,994. **Tire Flap Builder.** D. L. Williams, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,857,998. **Tire Flap Builder.** H. M. Brown, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,858,660. **Thermostatically Controlled Heater.** R. W. Brown, assignor to Firestone Tire & Rubber Co., both of Akron, O.

1,858,978. **Printing Plate Mold.** R. D. Bain and J. Nelson, assignors to Lamson Paragon Supply Co., Ltd., all of London, England.

1,859,197. **Tire Spreader.** W. H. Crossley, assignor of ½ to J. R. Elliff, both of Klamath Falls, Ore.

1,859,305. **Tire Repairer.** L. M. Littlefield, Springfield, assignor to Fisk Rubber Co., Chicopee Falls, both in Mass.

1,859,330. **Gum Strip Applier.** C. H. Desautels, Springfield, assignor to Fisk Rubber Co., Chicopee Falls, both in Mass.

1,859,337. **Inner Tube Vulcanizer.** C. E. Maynard, Northampton, assignor to Fisk Rubber Co., Chicopee Falls, both in Mass.

1,859,538. **Tire Builder.** F. J. Shook, assignor to National Rubber Machinery Co., both of Akron, O.

1,859,785. **Tire Tread Cutter.** L. H. Messinger, Jr., assignor to Black Rock Mfg. Co., both of Bridgeport, Conn.

1,859,849. **Mold Handling Device.** H. D. Stevens and N. H. Myers, assignors to Firestone Tire & Rubber Co., all of Akron, O.

1,859,901. **Extruding Apparatus.** B. M. A. Trebes, Berwyn, Ill., assignor to Bell Telephone Laboratories, Inc., New York, N. Y.

1,859,907. **Plastic Material Embosser.** R. G. Anderson, New Haven, assignor, by mesne assignments, to Goodyear's India Rubber Glove Mfg. Co., Naugatuck, both in Conn.

1,860,342. **Tire Building Drum.** A. L. Heston, Columbiana, assignor to National Rubber Machinery Co., Akron, both in O.

Dominion of Canada

321,736. **Rubber Sandal Mold.** H., A., and G. Steppe, co-inventors, all of Berchem-Ste-Agathe, Belgium.

321,759. **Tire Shaper and Airbag Inserter.** B. De Mattia, Clifton, N. J., U. S. A.

321,835. **Insulated Cable Apparatus.** British Insulated Cables, Ltd., Prescot, assignee of W. Whiteley and C. Wilkinson, co-inventors, both of Helsby, all in England.

322,149. **Rubber Article Mold.** Dunlop Rubber Co., Ltd., London, England, and Anode Rubber Co., Ltd., Guernsey, Channel Islands, assignees of D. F. Twiss and E. A. Murphy, co-inventors, both of Birmingham, England.

322,184. **V-Belt Vulcanizer.** A. L. Freedlander, Dayton, O., U. S. A.

322,294. **Tire Collapsible Drum.** Goodyear Tire & Rubber Co., assignee of H. A. Brittain, both of Akron, O., U. S. A.

322,368. **Dummy Sweetmeat Mold.** T. and W. Errington, co-inventors, both of Portsmouth, Hampshire, England.

322,539. **Shoe Manufacturing Machine.** United Shoe Machinery Co. of Canada, Ltd., Montreal, P. Q., assignee of R. J. Rice, Johnson City, N. Y., U. S. A.

322,706. **Inner Tube Vulcanizer.** National Rubber Machinery Co., Akron, O., assignee of P. De Mattia, Passaic, N. J., both in the U. S. A.

United Kingdom

364,132. **Hose Pipe Apparatus.** B. F. Goodrich Co., New York, N. Y., assignee of C. C. Cadden, Akron, O., both in the U. S. A.

365,035. **Web Coating Device.** Boston Blacking Co., Ltd., Leicester, assignee of E. A. Ellis, Medford, Mass., U. S. A.

365,124. **Tire Repairer.** A. Dirner, D. Stollmann, and E. Toperczer, all of Kosice, Czechoslovakia.

365,274. **Fabric Rubberizer.** Gum-

* Pictured in group illustration.

miwerke Fulda A. G., Fulda, Germany.

366,204. **Molding Machine.** Dunlop Rubber Co., Ltd., London, H. Willshaw and H. Smith, Ft. Dunlop.

366,863. **Rubber Strip Cutter.** International General Electric Co., Inc., New York, N. Y., U. S. A., assignee of Allgemeine Elektricitäts-Ges., Berlin, Germany.

Germany

550,535 and 550,536. **Edge Trimmer on Footwear.** H. C. L. Dunker, Helsingborg, Sweden. Represented by K. Hallbauer and A. Bohr, both of Berlin.

551,472. **Fabric Tester.** Dunlop Rubber Co., Ltd., London, England. Represented by B. Kaiser and E. Salzer, both of Frankfurt a. M.

Designs

1,214,639. **Circular Rubber Cutting Saw.** R. Brabender, Wuppertal-Elberfeld.

1,216,123. **Attaching Removable Heels.** H. Horster, Hilden a. Rh.

1,216,260. **Vulcanizing Apparatus.** T. Czernik and J. Bsumek, both of Neustadt i. O.S.

1,217,790. **Cutting Die.** Gebruder Henrich G. m. b. H., Bechlingen, Wetzlar-Land.

1,218,169. **Vulcanizer.** W. Stahl, Essen.

Process

United States

1,856,684. **Porous Body.** H. Ziegner, Hagen, Germany.

1,857,972. **Hollow Article.** E. A. Phillips, assignor to India Rubber, Gutta Percha & Telegraph Co., Ltd., both of London, England.

1,858,279. **Bottle Cap.** C. J. Parker, Govans, Md., assignor to Crown Cork & Seal Co., Inc., New York, N. Y.

1,859,468. **Belt Splice.** D. Repony, Clifton, assignor to Raybestos-Manhattan, Inc., Passaic, both in N. J.

1,859,915. **Stocking Protector.** W. R. Dowman, Sharon, Mass.

Dominion of Canada

321,867. **Rubberized Fabric.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of S. J. Williamson, Belmont, Mass., U. S. A.

321,951. **Goods from Aqueous Dispersions.** Dunlop Rubber Co., Ltd., London, England, and Anode Rubber Co., Ltd., Guernsey, Channel Islands, assignees of E. A. Murphy, Birmingham, England.

321,952. **Goods from Aqueous Dispersions.** Dunlop Rubber Co., Ltd., London, England, and Anode Rubber Co., Ltd., Guernsey, Channel Islands, assignees of E. A. Murphy and E. W. B. Owen, co-inventors, both of Birmingham, England.

322,164. **Homogeneous Rubber Deposition.** F. Gabor and P. Klein, both of Budapest, Hungary, and A. Szegvari, Akron, O., U. S. A., co-inventors.

322,277. **Endless V-Belt.** Dayton Roderwald Co., Dayton, O., U. S. A., assignee of R. Roderwald, Berlin, Germany.

322,293. **Tire.** Goodyear Tire & Rubber Co., assignee of G. D. Mallory, both of Akron, O., U. S. A.

322,370. **Floor Mat.** A. H. Alexander and R. H. Oliver, co-inventors, both of Victoria, B. C.

United Kingdom

364,598. **Coating Skins.** Soc. Anon. A. Canard & Fils, Loire, France.

365,264. **Brake Band and Shoe.** S. C. Clark, Pontiac, Mich., U. S. A.

365,641. **Footwear.** H. Broomfield, Northamptonshire.

365,674. **Latex-Treated Cord.** A. Bunger, Barmen, Germany.

365,755. **Attaching Rubber to Metal.** J. Rockoff, Dayton, O., U. S. A.

365,971. **Diaphragm for Electrolysis.** H. Beckmann, Berlin, Germany.

366,120. **Articles from Aqueous Dispersions.** Dunlop Rubber Co., Ltd., London, Anode Rubber Co., Ltd., Guernsey, Channel Islands, and E. W. Madge, Ft. Dunlop.

366,125. **Cable Joint.** Western Electric Co., Ltd., London. (E. Studt, A. R. Kemp, and F. S. Malm, all of Nordenham, Germany.)

366,160. **Liner.** Goodyear Tire & Rubber Co., assignee of W. D. Wolfe, both of Akron, O., U. S. A.

366,559. **Road Paving.** L. Lewis, London.

366,652. **Rubber Electrodeposition.** L. Mellersh-Jackson, London. (Siemens Elektro-Osmose Ges., Berlin, Germany.)

366,754. **Imitation Suede Leather.** W. Betambeau, London.

366,864. **Coated Fabric.** J. L. Ward and Hanford & Miller, Ltd., both of Leicestershire.

366,938. **Latex Impregnated Belting.** J. Dawson & Son, Ltd., and J. Dawson, both of Lincoln.

Germany

550,788. **Making Block Belts.** R. Felsche, Magdeburg.

551,466. **Lining Tubes by Electrical Deposition.** Dunlop Rubber Co., Ltd., London, England, and Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands. Represented by W. Karsten and C. Wiegand, both of Berlin.

551,736. **Pneumatic Tires.** Goodyear Tire & Rubber Co., Akron, O., U. S. A. Represented by G. Lotterhos, Frankfurt a. M., and H. Mortensen and W. von Sauer, both of Berlin.

551,967. **Tires.** I. G. Farbenindustrie A. G., Frankfurt a. M.

552,032. **Rubber Channels.** Berliner Gummiwaaren-Fabrik Paersch & Kerstan, Berlin.

Chemical

United States

1,856,596. **Accelerator.** G. H. Stevens, Newark, N. J.

1,856,819. **Accelerator.** C. O. North and W. Scott, both of Nitro, W. Va., assignors to Rubber Service Laboratories Co., Akron, O.

1,857,981. **Antioxidant.** L. B. Sebrell, assignor to Goodyear Tire & Rubber Co., both of Akron, O.

1,858,344. **Accelerator.** W. Scott, Nitro, W. Va., assignor to Rubber Service Laboratories Co., Akron, O.

1,858,577. **Accelerator.** A. Cambron, Montreal, P. Q., Canada, assignor, by mesne assignments, to Roessler & Hasslacher Chemical Co., a corp. of Del.

1,859,686. **Rubber-like Mass.** E. Tschunkur and W. Bock, both of Cologne, Mulheim, assignors to I. G. Farbenindustrie A. G., Frankfurt a. M., all in Germany.

1,859,801. **Age Resister.** W. Scott, Nitro, W. Va., assignor to Rubber Service Laboratories Co., Akron, O.

1,860,026. **Hard Rubber Composition.** I. Q. Gurnee, Butler, N. J.

Dominion of Canada

321,828. **Rubber Electrodeposition Process.** Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands, assignee of E. A. Willson, Cuyahoga Falls, O., U. S. A.

321,868. **Accelerator.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of W. E. Messer, Naugatuck, Conn., U. S. A.

321,924. **Mixed Accelerator.** Rubber Service Laboratories Co., Akron, O., assignee of R. L. Sibley, Nitro, W. Va., both in the U. S. A.

322,356. **Gutta-percha-like Material.** Dunlop Rubber Co., Ltd., London, England, and Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands, assignees of E. A. Murphy and R. G. James, co-inventors, both of Birmingham, England.

322,373. **Rubberized Plastic Material.** C. Angot, Bezons, Seine, France.

322,450. **Rubber Compounding Process.** Barrett Co., New York, N. Y., assignee of A. B. Cowdery, Needham, Mass., and T. A. Bulifant, Maywood, N. J., co-inventors, all in the U. S. A.

322,510. **Antioxidant.** Rubber Service Laboratories Co., Akron, O., assignee of J. R. Ingram, Nitro, W. Va., both in the U. S. A.

United Kingdom

363,698. **Road Composition.** A. Breuer, Cologne, Germany.

363,810. **Synthetic Rubber.** J. Y. Johnson, London. (I. G. Farbenindustrie A. G., Frankfurt a. M., Germany.)

363,859. **Coating Composition.** H. A. Bruson, Philadelphia, Pa., U. S. A.

363,862. **Accelerator.** Naugatuck Chemical Co., assignee of W. E. Messer, both of Naugatuck, Conn., U. S. A.

364,089. **Synthetic Rubber.** J. Y. Johnson, London. (I. G. Farbenindustrie A. G., Frankfurt a. M., Germany.)

364,092. **Antioxidant.** Goodyear Tire & Rubber Co., Akron, O., U. S. A.

364,243. **Antioxidant.** Goodyear Tire & Rubber Co., assignee of W. M. Lauter, both of Akron, O., U. S. A.

365,060. **Antioxidant.** Rubber Service Laboratories Co., Akron, O., assignee of S. M. Evans, Nitro, W. Va., both in the U. S. A.

365,102. **Synthetic Rubber.** Imperial Chemical Industries, Ltd., London.

365,493. **Antioxidant.** Imperial Chemical Industries, Ltd., London.

365,600. **Rubber Dyes.** I. G. Farbenindustrie A. G., Frankfurt a. M., Germany.

366,009. **Rubber Plasticizing Agent.** Pfenning-Schumacher-Werke Ges., Barmen, Germany.

366,136. **Antioxidant.** Electrical Research Products, Inc., New York, N. Y., U. S. A., and J. J. Gilbert and F. S. Malm, both of London.

366,139. **Sponge Rubber Composition.** G. P. Denton, Hertfordshire.

366,521. **Fibrous Composition.** H. D. Elkington, London. (Flintkote Co., Boston, Mass., U. S. A.)

366,550. **Synthetic Rubber.** A. Carpmael, London. (I. G. Farbenindustrie A. G., Frankfurt a. M., Germany.)

366,554. **Accelerator.** Rubber Serv-

ice Laboratories Co., Akron, O., assignee of R. L. Sibley, Nitro, W. Va., both in the U. S. A.

366,806. **Rubber Flooring Composition.** H. Paulus, Nuremberg, Germany.

366,944. **Synthetic Rubber.** A. Carpmael, London. (I. G. Farbenindustrie A. G., Frankfurt a. M., Germany.)

Germany

535,054. **Chlorinated Products.** New York Hamburger Gummi-Waaren Co., Hamburg.

550,884. **Vulcanizing Method.** Chemische Fabrik Kalk G. m. b. H., and H. Oehme, both of Koln-Kalk.

551,549. **Vulcanizing Rubber.** Rubber Service Laboratories Co., Akron, O., U. S. A. Represented by G. Lotterhos, Frankfurt a. M., H. Mortensen and W. Sauer, both of Berlin.

551,805. **Accelerating the Cure.** I. G. Farbenindustrie A. G., Frankfurt a. M.

551,991. **Aging Vulcanized Rubber.** British Dyestuffs Corp., Ltd., C. J. T. Cronshaw, and W. J. S. Naunton, all of Blackley, England. Represented by S. Hamburger, Berlin.

General

United States

18,457 (Reissue). **Vibration Dampening Mounting.** H. C. Lord, Erie, Pa.

1,856,138. **Sand Blast Stopper Valve.** R. Ruemelin, St. Paul, Minn.

1,856,164. **Musical Novelty.** J. W. Kelly, Long Beach, Calif.

1,856,323. **Screen.** E. B. Feaster, W. Newton, Mass.

1,856,632. **Buoyant Bathing Belt.** G. E. Haines, assignor to L. H. Gilmer Co., both of Philadelphia, Pa.

1,856,647. **Joint Mechanism.** H. C. Lord, Erie, Pa.

1,857,087. **Heat Exchanging Container.** B. Lindemann, Berlin, Germany.

1,857,091. **Paper Roll Hoisting Plug.** F. von der Horst, assignor to Tribune Co., both of Chicago, Ill.

1,857,144. **Tire.** E. Eger and S. P. Thacher, assignors to Morgan & Wright, all of Detroit, Mich.

1,857,145. **Tongue and Mouth Cleaner.** L. L. Funk, Chicago, Ill.

1,857,153. **Bathing Shoe.** C. W. Hubbell, assignor to Goodyear's India Rubber Glove Mfg. Co., both of Naugatuck, Conn.

1,857,156. **Eyeshield.** H. Lang, New York, N. Y.

1,857,168. **Cushioning Connection.** H. W. Steiner, J. G. Eldridge, and W. C. Keys, all of Detroit, Mich., assignors to Mechanical Rubber Co., Cleveland, O.

1,857,170. **Collar Stiffener Blank.** F. H. Taber, New Bedford, Mass.

1,857,179. **Colostomy Belt.** M. A. Bowman, Rochester, Minn.

1,857,382. **Tire Valve.** W. L. Ingram, assignor of ½ to F. W. Ingram, both of Chicago, Ill.

1,857,476. **Condenser.** R. S. Reynolds, Louisville, Ky.

1,857,518. **Golf Ball.** C. R. Sibley, Lake Mary, Fla., assignor to Sibley-Pym Corp., Lynn, Mass.

1,857,567. **Blood Pressure Tourniquet.** J. Plesch, Berlin, Germany.

1,857,703. **Puncture Marker and Tube Deflater.** H. C. Westphal, El Paso, Tex.

1,857,903. **Electrolytic Apparatus.** A. G. Wensley and W. S. Jackson, assignors to Anaconda Copper Mining Co., all of Anaconda, Mont.

1,857,989. **Washing Implement.** G. Virneburg, New York, N. Y.

1,858,094. **Pneumatic Tire.** A. R. Iruz, Torreon, Mexico.

1,858,148. **Artificial Flower.** S. M. Freese, Temperance, Mich.

1,858,196. **Electric Plug Connecter.** H. H. Wermine, Villa Park, assignor to Belden Mfg. Co., Chicago, both in Ill.

1,858,356. **Nipple.** F. Brown, White House, N. J., assignor to General Health Corp., Philadelphia, Pa.

1,858,524. **Arch Support.** W. M. Scholl, Chicago, Ill.

1,858,680. **Heat Insulating Material.** A. B. Merrill, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

1,858,694. **Throat Applicator.** W. E. Walsh, assignor to Connecticut Hard Rubber Co., both of New Haven, Conn.

1,858,711. **Doorstop.** R. W. Lane, Canton, O.

1,858,748. **Storage Battery Terminal Protector.** H. A. Paradis and W. C. Anderson, both of Chicopee Falls, Mass.

1,858,752. **Telephone Stand Attachment.** C. R. Sentney, Hollywood, Calif.

1,858,946. **Ship's Light.** T. Utley, Tuebrook, Liverpool, England.

1,858,991. **Balloon.** C. A. Frost, Chicago, Ill.

1,859,489. **Curtain Rod Attachment.** J. Appleyard, Fall River, Mass.

1,859,492. **Soap Holder.** J. Balestra, New York, N. Y.

1,859,577. **Printing Press Attachment.** R. Ambrecht, Stapleton, N. Y.

1,859,656 and 1,859,657. **Tire Chain Nonskid Link.** G. R. Cunnington, assignor, by mesne assignments, to General Tire & Rubber Co., both of Akron, O.

1,859,733. **Nursing Bottle.** L. Fort, Atlanta, Ga.

1,859,777. **Cushioning Connection.** W. C. Keys, H. W. Steiner, and J. G. Eldridge, all of Detroit, Mich., assignors to Mechanical Rubber Co., Cleveland, O.

1,859,800. **Snapper Roller Pad.** L. R. Schwartz, Lodgepole, Neb.

1,859,805. **Toy Airplane.** N. M. Sleeper, Upper Lake, Calif., assignor of ⅓ to W. H. Edmands and ⅓ to J. C. McFayden.

1,859,818. **Arch Support.** J. M. Doolittle, Pittsburgh, Pa.

1,859,829. **Vacuum Contact Frame.** L. H. Klitsche, assignor to Klitsche & Co., both of Los Angeles, Calif., a copartnership composed of A. N. and L. H. Klitsche.

1,859,893. **Suction Cup.** O. C. Ritz-Woller, Chicago, Ill.

1,859,922. **Floor Covering.** A. G. Holland, Bridgeport, Conn., assignor to Sidney Blumenthal & Co., Inc., New York, N. Y.

1,860,255. **Budding and Grafting Tape.** P. B. L'Hommedieu, assignor to Johnson & Johnson, both of New Brunswick, N. J.

1,860,269. **Power Belt.** R. J. Stokes, Princeton Township, assignor to Thermoid Rubber Co., Trenton, both in N. J.

Dominion of Canada

321,734. **Mat.** F. M. Williams and E. W. Coble, co-inventors, both of Toledo, O., U. S. A.

321,755 and 321,756. **Pneumatic Wheel.** M. R. Conigrave, Leederville, Australia.

321,821. **Waste and Overflow Device.** J. Wolfferts, Dusseldorf, Germany.

321,926. **Pressure Gage.** A. Schrader's Son, Inc., assignee of J. Wahl, both of New York, N. Y., U. S. A.

321,927. **Valve System.** A. Schrader's Son, Inc., New York, assignee of J. H. Clo, Baldwin, both in N. Y., U. S. A.

321,928. **Pressure Gage.** A. Schrader's Son, Inc., assignee of J. Wahl, both of New York, N. Y., U. S. A.

321,931. **Golf Club Shaft.** A. G. Spalding & Bros. of Canada, Ltd., Brantford Ont., assignee of M. B. Reach, Springfield, Mass., U. S. A.

321,932. **Golf Club.** A. G. Spalding & Bros. of Canada, Ltd., Brantford, Ont., assignee of W. F. Reach, Springfield, Mass., U. S. A.

321,945. **Car Platform Buffer.** Waugh Equipment Co., assignee of H. D. Page, both of Depew, N. Y., U. S. A.

321,946. **Vehicle Rubber Spring.** Waugh Equipment Co., assignee of R. J. O'Brien, both of Depew, N. Y., U. S. A.

321,997. **Bottle Closure and Dropper.** T. J. Dykema, Pittsburgh, Pa., U. S. A.

322,016. **Jar Wrench and Holder.** J. J. Neufeld, Herbert, Sask.

322,033. **Inner Tube and Valve Stem.** F. H. Watson, Jonesboro, Ark., U. S. A.

322,042. **Porous Article.** Anode Rubber Co., Ltd., Guernsey, Channel Islands, assignee of M. Havas and F. Gabor, co-inventors, both of Budapest, Hungary.

322,074. **Pneumatic Tire.** Dunlop Rubber Co., Ltd., London, assignee of R. Truesdale, Birmingham, both in England.

322,107. **Rubber Covered Article.** Ohio Rubber Co., assignee of B. Bronson, both of Cleveland, O., U. S. A.

322,147. **Window Ventilator.** A. Boudreau, inventor, and O. Couture, assignee of ½ the interest, both of Montreal, P. Q.

322,183. **Gasket.** A. L. Freedlander, Dayton, O., U. S. A.

322,357. **Diaphragm Mechanism.** H. C. Lord, co-inventor with and assignee of I. P. Whitehouse, both of Erie, Pa., U. S. A.

322,433. **Railway Car Draft Gear.** A. Spencer, London, England.

322,466. **Tire Valve Stem Cap.** Cap Coupler Corp., New York, assignee of C. B. Knudsen, Mamaroneck, both in N. Y., U. S. A.

322,507. **Pneumatic Tire.** Roadless Traction, Ltd., assignee of P. H. Johnson, both of Hounslow, England.

322,554. **Railway Car Draft Gear.** R. T. Glascodine and R. L. Whitmore, co-inventors, both of London, England.

322,582. **Stenciling Machine.** M. M. Harding, Los Angeles, Calif., U. S. A.

322,626. **Buffing and Draw Gear.** R. L. Whitmore, London, England.

322,717 and 322,718. **Floor Covering.** Sidney Blumenthal & Co., Inc., New York, N. Y., assignee of A. G. Holland, Bridgeport, Conn., both in the U. S. A.

United Kingdom

363,003. **Tennis Racket Handle.** Dunlop Rubber Co., Ltd., London, Anode Rubber Co., Ltd., Guernsey, Channel Islands, and F. H. Lane, Ft. Dunlop.

363,039. **Vehicle Shock Absorber.** Adams Patent Suspension Co., Ltd., London, and C. Macbeth, Birmingham.
363,089. **Fountain Pen Sac.** F. B. Dehn, London. (Parker Pen Co., Janesville, Wis., U. S. A.)
363,101. **Eye Massager.** L. R. Lacy, London.
363,256. **Nursing Bottle.** E. Pitavy, Paris, France.
363,275. **Massager.** H. Krauter, Vienna, Austria.
363,303. **Fishing Tackle.** T. L. Griffiths, Birmingham.
363,329. **Stopper.** C. J. H. Mackenzie-Kennedy, London.
363,371. **Accumulator.** F. Temple, Lincolnshire.
363,523. **Pneumatic Tire.** J. Steiner, Thun, Switzerland.
363,625. **Ice Tray.** Copeman Laboratories Co., assignee of L. G. Copeman, both of Flint, Mich., U. S. A.
363,634. **Golf Club.** Wilson-Western Sporting Goods Co., Chicago, assignee of C. G. Jansky, Berwyn, both in Ill., U. S. A.
363,748 and 363,749. **Railway Vehicle Axlebox.** G. Spencer, Moulton & Co., Ltd., and R. T. Glascodine, both of Westminster.
363,886. **Buffer and Draw Gear.** G. Spencer Moulton & Co., Ltd., and R. T. Glascodine, both of Westminster.
363,992. **Printing Plate.** Paramat, Ltd., London, and J. Graham, Surrey.
364,272. **Hair Waver.** H. G. Baumgarten, Amstelveen, Holland.
364,287. **Air Cushion.** L. E. Layland, London.
364,310. **Unjointed Hinge.** V. A. Trier, London.
364,368. **Garment Supporting Strap.** Russell Mfg. Co., assignee of F. J. Zimmerman and H. W. Bauer, all of Middletown, Conn., U. S. A.
364,372. **Blotter.** C. F. Taylor, York.
364,478. **Centrifugal Apparatus Supporter.** Siemens-Schuckertwerke A. G., Berlin, Germany.
364,528. **Bottle Stopper.** H. E. Wadsworth, Manchester.
364,690. **Windscreen Wiper.** H. B. Whall, London.
364,732. **Heel Friction Pad.** Phillips Rubber Soles, Ltd., and G. Phillips, both of London.
364,917. **Suction Box.** Usines C. Catala, M. Catala and A. Huart-Catala, Virginal, Belgium.
364,958. **Waterproof Boot.** A. Arfeuillere, Seine-et-Oise, France.
365,013. **Gill-bar Cleaner.** Soc. Textile Accessories and E. Fievet, both of Lille, France.
365,195. **Frame.** R. J. Lavers, F. A. Orr, both of Sidmouth, Devon, H. H. Burton, A. G. Barrett, and Leicester Rubber Co., Ltd., all of Leicester.
365,201. **Dentists' Mixer.** W. W. Triggs, London. (Detroit Dental Mfg. Co., Detroit, Mich., U. S. A.)
365,291, 365,292, 365,293, and 365,294. **V-Belt.** A. L. Freedlander, Dayton, O., U. S. A.
365,343. **Hair Remover.** L. M. Butcher (trading as Mme. Julié), Denbighshire.
365,353. **Furniture Leg Pad.** W. Kingsnorth, London.
365,381. **Refrigerated Showcase.** Parnall & Sons, Ltd., Birmingham, and A. H. Gabb, Bristol.
365,457. **Surgical Appliance.** B. Höflinger, Riga, Latvia.
365,481. **Polishing Pad.** Ford Motor Co., Ltd., London, assignee of J. M. Hanson, Detroit, Mich., U. S. A.

Germany

549,994. **Pessary.** A. Roth, Saarbrucken, and O. Eisenbeis, Neunkirchen, Saar.
550,271. **Atomizer.** G. W. Bohler, Frankfurt a. M.
550,714. **Hypodermic Syringe.** L. Laval, La Rochelle, France. Represented by F. Seemann and E. Vorwerk, Berlin.
551,184. **Coating for Tires.** A. G., Johannes Jeserich, Berlin-Charlottenburg.
551,616. **Dental Material.** K. Taschner, Duren i. Rhld.

Designs

1,210,934. **Heel from Tire Material.** Bremer Leder-Grosshandels G. m. b. H., Bremen.
1,211,133. **Syringe.** A. G. für Feinmechanik vorm. Jetter & Scheerer, Tuttlingen.
1,211,168. **Sponge Rubber Shoe Protector.** F. Lehrmann, Gochsheim i. Unterfr.
1,211,385. **Heel.** Vorwerk & Sohn, Wuppertal-Barmen.
1,211,403. **Rubber-soled Shoe. J. Loewengart, Frankfurt a. M.**
1,211,641. **Heel Tread Patch.** Osteroder Gummiwerk Friedr. Hoper, Osterode, Harz.
1,211,671. **Leather and Rubber Heel.** F. Baptist, Heidelberg.
1,211,816. **Heel. M. Teply, Cologne.**
1,212,450. **Nipple.** Fromms Act Julius Fromm Gummiwerk, Berlin-Kopenick.
1,212,659. **Heel.** S. Schureck, Dusseldorf.
1,212,667. **Sole.** Dusseldorfer Gummiwerk Theiler & Seeberger G. m. b. H., Dusseldorf-Heerdt.
1,212,764. **Tire Cover.** E. Pluckhahn, Parchim i. Mecklbg.
1,212,817. **Air Cushion.** Mannheimer Gummi-Stoff-Fabrik Rode & Schwalenberg G. m. b. H., Mannheim.
1,212,880. **Gaiter.** F. Schwarzler, Obertsdorf i. Allg.
1,212,973. **Finger Cot.** A. Lehnitz, Hamburg.
1,213,051. **Cold Cured Sole.** Firma Carl Scheuermann, Bochum.
1,213,066. **Gas Tube.** Blodner & Vierschrodt, Gummiwarenfabrik & Hanfschlauchweberei A.G., Gotha.
1,213,191. **Pneumatic Wheel.** Dunlop Rubber Co., Ltd., London, England. Represented by B. Kaiser and E. Salzer, both of Frankfurt a. M.
1,213,303. **Insert for Tires.** G. Hausler, Ullersdorf i. Isergeb, and W. Hausler, Bad Flinsberg i. Isergeb.
1,213,420. **Wheel for Vehicles on Rails.** Continental Gummi-Werke A. G., Hannover.

Trade Marks

United States

293,598. **Leader.** Belts. L. H. Gilmer Co., Tacony, Philadelphia, Pa.
293,657. **Fun-Flote.** Pneumatic mattresses. Hodgman Rubber Co., Framingham, Mass.
293,705. **Free Wheeling.** Tires and tubes. Atlas Supply Co., Wilmington, Del.
293,711. **Electro Sheet.** Electric heating pad. Seamless Rubber Co., Inc., New Haven, Conn.
293,731. **Airline.** Golf balls. General Tire & Rubber Co., Akron, O.
293,733. Label bearing the words: **"Safe, Safety-heet, 'A Solid Sheet of Warmth,' Sanitary."** Electric heating pad. United Drug Co., Boston, Mass.
293,738. **El Troyano.** Prophylactic articles. Youngs Rubber Co., Inc., New York, N. Y.
293,840. Circle containing the words: **"Caddy Special"** and the representation of a golf bag and clubs. Shoes. National Bellas Hess Co., Inc., New York, N. Y.
293,865. Label bearing the words: **"Precision, Matched to You."** Golf and tennis balls. D. Berlin, Detroit, Mich.
293,884. Circle containing the letter: **"S."** Electrical hard rubber products. Jos. Stokes Rubber Co., Trenton, N. J.
293,904. **Heveatex.** Raw and processed latex. Heveatex Corp., Malden, Mass.
293,923. Label bearing representation of the bust of a knight. Heels. A. J. Friedman, Inc., New York, N. Y.
293,972. **Conforma.** Girdles and corsets. I. B. Kleinert Rubber Co., New York, N. Y.
294,045. **Twenty Grand.** Footwear. Best & Co., Inc., New York, N. Y.
294,058. **"Forty Eight."** Tires. Sears, Roebuck & Co., Chicago, Ill.
294,152. Label bearing representation of a dirigible and the words: **"Los Angeles, Special."** Footwear. Endicott Johnson Corp., Endicott, N. Y.
294,180. **Tu-Tone.** Inner tubes. Goodyear Tire & Rubber Co., Akron, O.
294,286. **Nightingale.** Shoes. Sears, Roebuck & Co., Chicago, Ill.
294,294. Portrait of a woman and the words: **"Lady Treat."** Shields, combs, etc. Kresge Department Store Corp., Newark, N. J.
294,322. **Tru-Form, Shoes, Scientific Footwear Service.** Footwear. Tru-Form Shoes, Inc., New York, N. Y.
294,348. **O OM-PA.** Golf balls. J. B. Mackie, Far Rockaway, N. Y.
294,386. Representation of a package of rubber bands and the words: **"Janus, 16, Bands."** Elastic bands. A. W. Faber, Inc., Newark, N. J.

Prints

United States

13,721. **Both the Holeproof Half-Sock and Autogart Are Styled with This in Mind.** Self-supporting socks. Holeproof Hosiery Co., Milwaukee, Wis.

Designs

United States

86,720. **Tire.** Term 14 years. R. E. Jenkinson, assignor to Goodyear Tire & Rubber Co., both of Akron, O.
86,771. **Tire.** Term 14 years. A. C. Gunsaulus, Akron, O.
86,800. **Tire.** Term 14 years. C. W. Moss, Kent, assignor to Goodyear Tire & Rubber Co., Akron, both in O.
86,810. **Tire.** Term 14 years. J. A. Schoedinger, Sr., Miami, Fla.
86,910. **Electric Cap Plug.** Term 14 years. R. Eckstein, New York, N. Y.
86,921 and 86,922. **Sole.** Term 3½ years. H. T. Mason, assignor to Quabaug Rubber Co., both of N. Brookfield, Mass.
87,034. **Sole.** Term 14 years. C. L. White, Cuyahoga Falls, assignor to Goodyear Tire & Rubber Co., Akron, both in O.

EDITOR'S BOOK TABLE

Book Reviews

"The Vanderbilt 1932 Rubber Handbook." W. F. Russell, Editor. R. T. Vanderbilt Co., Inc., 230 Park Ave., New York, N. Y. Flexible covers, 174 pages, 4 by 7 inches. Indexed.

This new edition of nearly 200 pages promises to be even more useful to the rubber technologist than its predecessor. The colored looseleaf pages divide the volume into 3 distinct sections. The first gives a complete description of each of the Vanderbilt products with extensive data for their successful use in rubber compounding. Many references are made to the more extensive experiments recorded in *The Vanderbilt News.* The clearness and conciseness with which this material is presented is salesmanship of the highest order.

The second portion consists of a series of authoritative articles on the more scientific side of rubber. The material is contributed by 29 specialists in their respective fields. The editor is to be congratulated for securing chapters from Europe as well as from this country, thereby adding to the prestige of the collection. Many of the subject titles have been retained from the previous edition, but the reviews have been completely rewritten. The subject matter of the new chapters reflect the trend of scientific and technical developments in the industry. The topics treated range from the more lowly problems, such as sulphur analysis, to the purely scientific question of the X-ray investigation of the hydrocarbon. An excellent summary of the theories of vulcanization is included.

The third section contains data and tables for the every day use of the rubber compounder. The material on volume costs, specific gravity, methods of computation, etc., allow the compounder to design and calculate the characteristics of his rubber compounds in an easy and efficient manner.

The handbook cleverly combines the advertising of compounding materials from a thoroughly scientific viewpoint with material that summarizes much of our present knowledge of rubber. This and the reference tables assure that the manual will be in constant use by its possessors. Reviewed by C. R. Boggs.

"Annual Survey of American Chemistry." Vol. VI. Calendar Year 1931. Edited by Clarence J. West. Foreword by Henry K. Benson, Chairman, Division of Chemistry and Chemical Technology. Published for National Research Council by The Chemical Catalog Co., 419 Fourth Ave., New York, N. Y., 1932. Cloth, 573 pages, 5 by 8¼ inches. Author and subject indices. Price $4.50 net.

In this volume a full review of rubber research for 1931 is given by John T. Blake, research chemist, Simplex Wire & Cable Co., Boston, Mass. The topics covered are American rubber, synthetic rubber, chemistry and structure, vulcanizing agents, accelerators, oxidation and antioxidants, scorching and anti-scorchers, compounding and compounding ingredients, testing and analysis, latex, electrical insulation, and practical applications.

"Statische en Dynamische Onderzoekingen met Cushionbanden." (Report to the Minister of the Department of Roads and Buildings.) By the Committee Appointed to Investigate the Requirements to Be Made for Cushion Tires. Algemeene Landsdrukkerij, The Hague, Holland, 1931. Paper, 8 by 11⅜ inches, 93 pages. Tables, graphs, diagrams, and illustrations.

The report is divided into 5 chapters and 2 appendices, one a bibliography and the other a review of tire regulations in other countries.

Chapter 1 gives a history of the commission, an outline of its investigation and the tires to be used besides a review of investigations conducted in foreign countries. Static investigations: apparatus used, method of measurement, results, and choice of a quantity to express the quality of a tire and to be employed in static judgment of tires are covered in this chapter.

Details of the dynamic tests and a description, and illustrations of the special apparatus for these tests form Chapter 3.

Chapter 4 carefully compares the results of static and dynamic investigations. The conclusion is that the relation between results of both methods is sufficiently close to justify testing tires by the static method. The final Chapter, 5, covers general observations on specifications for cushion tires.

New Publications

"Revertex, Concentrated Latex, Suggestions for Its Treatment and Use." Revertex Corp. of America, 40 Rector St., New York, N. Y. This 8-page bulletin contains general information concerning Revertex, its practical advantages, treatment, and use. The instructions include working directions covering storage, diluting, fillers, colors, stabilization, compounding, viscosity, vulcanization, antioxidants, and increase of tackiness.

The Vanderbilt News. R. T. Vanderbilt Co., 230 Park Ave., New York, N. Y. The March-April, 1932, number of this publication consists of reprinted articles on the Vanderbilt rubber compounding materials and test data concerning them. This issue is intended to tie up with the 1932 edition of the Vanderbilt Handbook, just off the press, and to place in the hands of rubber men as much condensed informative data as possible regarding all of the Vanderbilt materials.

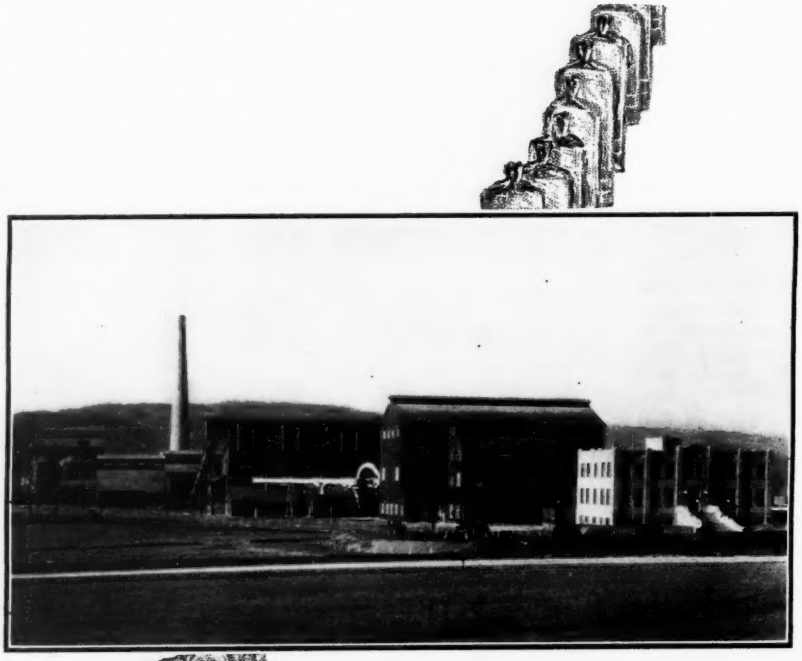
"Over the Rim Where the Future Lies." John Robertson Co., Inc., 123-131 Water St., Brooklyn, N. Y. This 4-page bulletin relates to Robertson hydraulic machinery for lead encasement of rubber hose for vulcanization and for the protection of electric cables. All of which are referred to as "machines of the future."

The India Owl. Vol. 4, No. 4, April, 1932. India Tire & Rubber Co., Akron, O. This 16-page house organ published monthly in the interests of India tire dealers is replete with news and helpful suggestions for these distributers all over the world. Attention is especially directed to the new India Aero Cushion Balloon tire, 7.50/15. Illustrations abound.

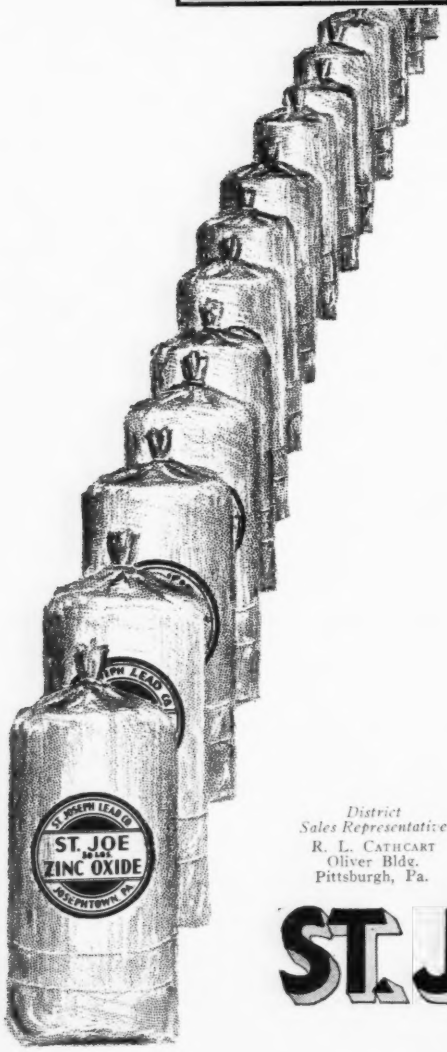
"Flexoart Rubber Molds." Real Art Rubber Moulds Co., 82 Luqueer St., Brooklyn, N. Y. This booklet comprises 10 pages of pictures showing rubber molds for casting reproduction of figures and art works in limitless variety. The materials adapted for casting in rubber molds are marblite, magnesite, plastex, ivorex, cement, and other compositions used in the manufacture of home and garden ornaments.

"1932 Year Book." The Tire & Rim Association, Inc., 1401 Guarantee Title Bldg., Cleveland, O. This official publication of 142 pages covers full and authoritative data on tires, rims, gages, etc., for automotive use. The information is arranged as it applies to the following classifications of equipment: namely, passenger cars, pneumatic trucks and busses, motorcycles, airplanes, solid tires. A section is devoted to miscellaneous equipment and engineering data. This is followed by a supplement covering European contours, loads and inflations, etc. The book is also accompanied by Supplement No. 1 on "Low Pressure Balloon Tire & Rim Information Approved as Experimental Practice," May 13, 1932.

"Special Survey of the Rubber Goods Industry." R. G. Dun & Co., New York, N. Y. This broadside from "Dun's Review" is a comprehensive survey compiled from information reported by offices and correspondents of R. G. Dun & Co., located in the principal producing and distributing centers in the United States. Crude rubber production and the attempts to curtail it are reviewed, and the statistical relation of production and consumption is tabulated, also the record of rubber prices showing their decline to the present record low. Tire production, quality, and decline in shipments are discussed. In footwear the decline of stocks is noted. Yearly production of proofed fabrics, heels, and soles are reported from 1925 to 1931 inclusive. The current conditions of rubber goods distribution is outlined as reported from 16 cities from coast to coast in the United States.



The St. Joseph Lead Company's Zinc Oxide Plant at Josephtown, Beaver County, Pa.



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Market Reviews

Crude Rubber

HOVERING close to the record low levels reached during June, rubber prices show little improvement. The unfavorable political situation in the early part of the month undoubtedly influenced the market, but statistics within the industry were sufficient to remove even the props of favorable Congressional action.

The steady high rate of shipments from Malaya and the estates in the Far East caused much discouragement in the market. For the first 5 months of this year Malayan shipments were about 8% higher than in the same period last year. United States stocks at the end of May were more than 50% over those of last year and estate production in May was again higher than last year.

The increased shipments from Malaya were said to result from the efforts of shippers to land their rubber here before the 5¢ import tax, proposed at first by Congress but later rejected, went into effect. Some color is given to this belief because June shipments are estimated to be below last year's. However, at present rates, it will be a long time before production is curtailed enough to influence the market. It is true that London and Liverpool stocks are steadily declining, but stocks here are not.

Business in the Outside Market has not improved much. Even though automobile manufacturers are a bit more active, they have so much rubber on hand that the slight increase in activity does not have any market influence.

A small spurt in business was registered as a result of demands by some of the smaller tire manufacturers. The excise tax on tires and tubes, effective June 21, prompted dealers to stock up. Tire manufacturers announced that they would increase prices on tires and tubes from 11 to 15%, and there was a rush to get in under the line. The rise in tire prices was a good sign, but because the mail-order houses and independents are not expected to fall in line, its effect may be lost. The fact is that tire manufacturers did a little better business this month, and the hope is general that they will continue to be able to do so.

Week ended May 28. Most of the drop in rubber prices for the week followed an announcement from a prominent house in Liverpool that it was going into bankruptcy. Prices were shaded from 4 to 10 points on this news, and together with the smaller declines of the other days, the total drop for the week was from 14 to 21 points. The market was closed on Saturday for a 3-day holiday over Decoration Day.

June closed at 2.74¢ against 2.95¢ the previous week; July 2.79 against 2.96; September 2.91 against 3.04; December 3.04 against 3.22; March 3.21 against 3.39.

RUBBER BULL POINTS

1. New car registration in May will probably be 10% above April against a normal seasonal increase of 1%.
2. London and Liverpool stocks are gradually being reduced.
3. Consumption of crude rubber in the United States for May was 29,197 long tons against 25,953 in April.
4. Production of pneumatic casings for April was 28.9% below April, 1931, bringing output in line with demand.
5. Pneumatic casings on hand April 30 were 1% below March and 1.9% below April, 1931.
6. Tire prices were raised 10 to 15% by several of the large companies, following the excise tax.
7. Tire sales increased in June prior to the imposition of the excise taxes on the 21st.

RUBBER BEAR POINTS

1. United States stocks on May 31 were 346,231 tons or 56.8% higher than last year at the same time.
2. Shipments from Malaya were 40,297 tons in May against 36,670 in April.
3. Crude rubber afloat to the United States on May 31 was 50,453 long tons against 40,387 long tons on April 30.
4. Shipments of pneumatic casings in April were 25% below those of April last year.
5. Dealers' stocks of crude rubber in Malaya were 42,563 tons at the end of May against 40,069 tons a year ago.
6. Ceylon shipments were 4,138 tons in May against 3,043 tons in April.
7. United States imports in May were 32,224 tons, a drop of 12.9% from April, but still 1.6% above those of May last year.
8. Far eastern census figures for May on estates show production of approximately 3,500 tons larger than in April.

The Outside Market saw only a little business. Prices were down fractionally, and there was the usual slow pace which precedes a holiday.

Ribbed smoked sheets closed at 2¾¢ against 2 15/16¢ the previous week. July-September was 2⅞ against 3; and October-December 3 1/16 against 3⅛.

Week ended June 4. At 2.60¢ for the July contract, rubber again sold at a new all-time low price. For the week prices were from 10 to 13 points lower. The easy tone at London, weakness in stocks and commodities, and lack of confidence generally before the Senate finally swung into action and balanced the budget, contributed to rubber's decline. The increased rate of shipments from the Far East also weighed down the market.

June closed at 2.64¢ against 2.74¢ last week; July 2.67 against 2.79; September 2.77 @ 2.82 against 2.91; December 2.94 against 3.04; and March 3.11 against 3.21.

May rubber shipments from British Malaya were 40,297 tons against 36,670 tons in April, and 44,281 tons during May, 1931. Ceylon shipped 4,138 tons compared with 3,043 tons during April and 4,535 tons in May last year.

These heavier shipments, together with those on the estates, were contrary to the hopes of gradually declining shipments. The Department of Commerce pointed out in its latest bulletin that production for 1932 on estates of over 100 acres was estimated at 256,000 tons on the basis of figures for the first 4 months of the year. This would compare with shipments of 239,538 tons in 1931.

"These April figures," says the Department bulletin, "contain no evidence of Malayan estates closing—production actually increased in the month when a slight decline is normal."

On small estates production in March and April was better than normal, but the annual rate indicated by production of the first 4 months is put at 156,700 tons against 196,547 tons in 1931.

The 2 new contracts, "No. 1B Standard" and the "AB," instituted trading on June 1. They will by April, 1933, supersede the present No. 1 Standard and New A contracts, but at present trading is still being carried on largely in the old contracts.

The principal feature of the new contracts is that they provide, in the event the United States government levies a duty or tax on crude rubber imports, the delivery of rubber in bond in warehouse, or in bond on dock in the port of New York. Otherwise the contracts are the same as the old ones.

Price changes in the Outside Market for the week were fractional. Scattered factory buying was in evidence, but on the whole transactions were as few and far between as they have been for many months.

June closed the week at 2 11/16¢ against 2¾¢ the week before; July-September 2 13/16 against 2⅞; and October-December 3 against 3 1/16.

Week ended June 11. Weakness in stocks and commodities was the principal reason for the decline of 1 to 7 points in the rubber market. On Thursday, when the cotton market reached the lowest point in 34 years, the rubber market, not to be outdone, went to 2.58¢ in the July contract, another all-time low record.

There was much switching between July and March deliveries at 46 points. From Monday to Thursday transactions totaled 1,030 tons; but on Friday and Saturday, because of the heavy switching operations, transactions totaled 2,910 tons.

At the close the July contract sold at 2.63¢ against 2.67¢ the week before; October 2.77 against 2.81; December 2.87 against 2.94; and March was 3.08 against 3.11.

While the Malayan shipments for May were larger than expected, it was explained that the increase probably resulted from the threat of an import tax by our government, and that this month's shipments will probably show a decline. From the London and Liverpool figures, this seems to be

the case. Arrivals for last week were 1,618 tons, against 2,416 tons in the same week last year. Stocks at the 2 centers decreased 998 tons last week.

April figures on shipments and consumption of pneumatic casings by the Rubber Manufacturers Association showed shipments by U. S. manufacturers in April of 3,697,630 casings, 25.2% above the figure of March, but 25% less than in April a year ago. Production of casings in April was 3,516,861, a decline of 4.2% from March and 28.9% less than in April, 1931. Casings on hand on April 30 were 9,845,820, a drop of 1% from March stocks and 1.9% from those of April 30, 1931.

The Rubber Exchange released figures showing that dealers' stocks of crude rubber in Malaya at the end of May totaled 42,563 tons, against 44,571 tons at the end of April, and with 40,069 tons at the end of April last year. Rubber awaiting shipments amounted to 4,974 tons on May 31 against 4,234 tons at the close of April.

Stocks afloat to the United States on April 30 were 40,387 tons against 56,700 tons last year. World stocks of crude rubber according to the latest statistics are 547,945 tons against 470,123 tons last year.

In the Outside Market trade was quiet, although manufacturers were reported to be showing a somewhat better interest in incoming rubber shipments. Price changes for the week were minor, with week-end prices about the same.

June contracts closed at 2¾¢ against 2 11/16¢ the week before; July-September 2⅞ against 2 13/16; and October-December 3¢ unchanged.

Week ended June 18. Trading in crude rubber centered around the May consumption report. Showing favorable figures, the market advanced from 3 to 5 points, but even these slight gains were erased next day after a reactionary tendency appeared in the market. For the week, prices were from 1 point down to 6 points up in a limited market.

June contract closed at 2.62¢ against 2.60¢ the previous week; July 2.65 against 2.63; September 2.75 against 2.72; December 2.93 against 2.87; and March 3.06 @ 3.08 against 3.08.

United States manufacturers, according to the report by the Rubber Manufacturers Association, took 29,197 long tons of rubber in May against 25,953 long tons in April, an increase of 12.5%.

Imports for May were 32,224 long tons, a drop of 12.9% below April and 1.6% higher than May last year. Domestic stocks were estimated at 346,231 long tons against 343,098 on April 30. This total is 1% higher than in April, and 56.8% higher than on May 31, 1931. A total of 50,453 long tons of crude rubber was said to be afloat for the United States on May 31 against 40,387 on April 30 and 55,173 long tons on May 31, 1931.

While domestic stocks indicate no decline in rubber on hand, shipments from both Malaya and the Dutch East Indies are off for the first part of 1932. Malayan shipments, for the first 5 months of 1932 were 201,516 long tons, against 219,853 last year, a decline of about 8%. Shipments from the Dutch East Indies for the first 4 months of this year were 76,764 tons against 91,207 tons last year, a drop of about 15%. Ceylon shipments for the first 5 months, at 19,616 tons, are approximately 28% below those of last year in the same period. Although not reflected in the U. S. figures, stocks at London and Liverpool on June 11 were 114,187 tons, a decrease of about 18% from last year's figures. It must also be pointed out that while shipments from the Far East indicate a lower rate of production, the consumption figures have shown a sharp drop too. With time, however, it is reasonable to expect that production will decrease further if prices do not improve, and consumption will increase under the stimulus of low prices.

As a result of the recent excise tax on tires and tubes imposed by Congress in its effort to balance the budget, rubber manufacturers announced an increase in tire prices to cover this tax. Six large companies will increase prices from 11 to 15% on tires and tubes, effective June 21, when the tax goes into effect. The only large company that has not fallen in line is Firestone, which is said to be holding off until it determines what the mail-order houses will do.

Prices in the Outside Market remained unchanged for the week. June was 2¾¢ at the close on Saturday; July-September 2⅞; and October-December 3¢.

One trader announced that tire factories were more active in the last week or so, and reported a more hopeful tone. Part of the activity received artificial stimulation, perhaps, from the tax to be imposed on tires and tubes on June 21. Dealers put in their orders on the old prices before the increases of 11 to 15% go into effect.

Automobile output for the week of June 11 made a new high for the year. The *Times'* index stood at 51.5 against 49.0 for the preceding week and 71.0 for the same week last year. *Cram's Automotive Reports* said actual output was 52,560 cars and trucks. Ford and the other low-priced manufacturers accounted for most of the increase.

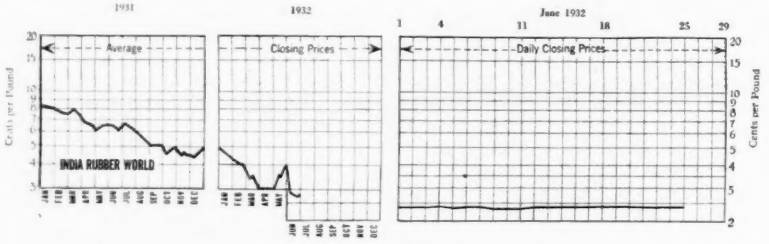
Week ended June 25. Sales of July and September positions and switches to the December and March positions accounted for much of the trading during the week. Statistics were of a contrary nature and largely discounted.

For the week changes were from 6 to 12 points downward, influenced by the lower prices in stocks as well as the trading operations. The July contract at the close on Friday was 2.56¢ against 2.62 the previous week; September 2.64 against 2.75; October 2.70 against 2.81; December 2.81 against 2.93; and March 2.90 against 3.06.

The rate of rubber output is showing a decline in some parts of the Far East like the Dutch East Indies where almost 300 estates are reported to be closed, but the process of reducing the large world stocks is gradual indeed. In the United States, May 31 stocks were higher than those on April 30, and more than 50% above those of last year at the same time.

In Great Britain, however, stocks are showing lower totals every week. Last week the decrease at London and Liverpool was 2,950 tons. This was higher than the unofficial estimates and was considered a good sign. Stocks there are now around 15% less than they were a year ago.

Members of the Rubber Exchange adopted regulations which will permit the transfer of No. 1 Standard and A contracts into the new No. 1B Standard and



New York Outside Market—Spot Closing Prices Ribbed Smoked Sheets

New York Outside Market—Spot Closing Rubber Prices—Cents Per Pound

	May, 1932								June, 1932														
	23	24	25	26	27	28*	30*	31	1	2	3	4	6	7	8	9	10	11	13	14	15	16	17	18
Ribbed Smoked Sheet	2 1/8	2 1/16	2 1/8	2 1/4	2 1/4	...	...	2 1/4	2 1/8	2 1/8	2 1/8	2 1/4	2 1/8	2 1/4	2 1/4	2 5/16	2 5/16	2 1/8	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4	2 1/4
No. 1 Thin Latex Crepe	3 1/8	3 1/16	3 1/8	3 1/8	3 1/8	...	...	3 1/8	3 1/16	3 1/16	3 1/16	3 5/16	3 1/16	3 5/16	3 5/16	3 1/16	3 1/16	3 1/16	3 5/16	3 1/8	3 1/8	3 1/8	3 1/8	3 1/8
No. 1 Thick Latex Crepe	4	3 1/8	3 1/16	3 1/4	3 1/4	...	...	3 1/4	3 5/16	3 5/16	3 5/16	3 1/8	3 5/16	3 1/8	3 1/8	3 1/8	3 1/16	3 1/16	3 5/16	3 1/8	3 1/8	3 1/8	3 1/8	3 1/8	3 1/8
No. 1 Brown Crepe	2 1/4	2 1/8	2 5/16	2 5/16	2 5/16	...	...	2 5/16	2 1/16	2 1/16	2 1/16	2 5/16	2 1/16	2 5/16	2 5/16	2 1/16	2 1/16	2 1/16	2 5/16	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8	2 1/8
No. 2 Brown Crepe	2 1/8	2 5/16	2 1/16	2 1/16	2 1/16	...	...	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16
No. 2 Amber	2 1/4	2 1/8	2 5/16	2 5/16	2 5/16	...	...	2 5/16	2 1/16	2 1/16	2 1/16	2 5/16	2 1/16	2 5/16	2 5/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16
No. 3 Amber	2 1/8	2 5/16	2 1/16	2 1/16	2 1/16	...	...	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16
No. 4 Amber	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	...	...	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16
Rolled Brown	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	...	...	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16	2 1/16

*Holiday.

AB contracts without commission charges to their principals. This ruling applies to contracts made prior to June 1, but not to extend beyond July 30. The transfer must be made into a month corresponding with the delivery month specified in the older contract. The regulations also do not apply to other fixed charges such as floor brokerage, clearance fees, taxes, and the like.

Quietness prevailed generally in the Outside Market during the week, with prices shaded slightly because of the lack of interest. June sold at 2-11/16 against 2¾ the previous week; July-September 2¾ against 2⅞; and October-December 2⅞ against 3¢.

All the returns are not yet in for new passenger car registrations in May, but indications are that they will be from 10 to 15% higher than in April, against a normal seasonal increase of about 1%. Ford, again, accounts for most of this increase. Commercial cars will show a similar trend according to estimates although the improvement will not be so marked as in passenger cars.

Foreign Rubber Absorption

Rubber absorption in foreign countries as a whole during the early months of 1932 has been at a new high rate. The United Kingdom absorption for 4 months is 33,305 tons against 23,432 in 1931; Australia 4,140 against 1,988; Canada 7,657 against 8,718; France 10,924 against 19,196; Germany 14,732 against 13,820; Italy 4,322 against 3,375; Japan 21,645 against 11,926; Netherlands 1,439 against 1,184; Spain 1,551 against 1,041. Absorption for 3 months this year in Russia was 8,934 against 5,328; Czechoslovakia 1,147 against 1,508. It is probably the case that restriction agitation during the first 2½ months of the year and the record low prices to date have contributed to the heavy foreign takings.

Exports of rubber goods from foreign countries are in most cases lighter thus far for 1932 than in 1931; consequently demand for rubber in the production of goods to be exported does not support increased consumption. Domestic trade in foreign rubber manufacturing countries is a subject on which definite knowledge is usually not available, but general reports indicate that trade in rubber manufactures has not been better than in 1931. On the whole it is believed foreign absorption thus far in 1932 has been abnormally high, but any definite signs of approaching balance between supply and demand of crude rubber might lead to continued heavy buying.

Furthermore foreign countries usually import most heavily in the last quarter of the year, and an accumulation of higher inventories of crude rubber at present prices by foregn manufacturers would not be surprising. The reduced exports of rubber manufactures from nearly all the principal manufacturing countries should in time cause higher rubber consumption in the small domestic industries of many other countries.

New York Quotations

Following are New York outside market rubber quotations in cents per pound for one year ago, one month ago, and June 25.

Plantations	June 26, 1931	May 25, 1932	June 25, 1932
Rubber latex, gal..	75	51	51
Sheet			
Ribbed, smoked, spot	6¼/6⅜	2 7/8/2 11/16	2 11/16
Aug.-Sept.	6⅜/6⅝	.....	2¾
Oct.-Dec.	6⅝/6⅞	3 3/16/3 5/16	2⅞
Jan.-Mar.	6⅞/7⅛	3 5/16/3 3/8	3 /3 1/16
CREPE			
No. 1 Thin latex, spot	6⅞/7	3 7/8/3 11/16	3 5/16/3 1/16
Aug.-Sept.	7⅛/7⅜	.....	3 1/16/3¾
Oct.-Dec.	7⅛/7½	4 /4⅛	3 1/16/3⅜
Jan.-Mar.	7½/7¾	4¼/4½	4
No. 2 Amber, spot	6⅛/6⅜	2 1/16/2⅞	2 9/16/2 5/8
Aug.-Sept.	6¼/6½	.....	2 5/8/2 11/16
Oct.-Dec.	6½/6⅝	3 /3½	2¾/2 13/16
Jan.-Mar.	6⅝/6¾	3⅛/3 3/16	2⅞/3
No. 3 Amber, spot	6 /6¼	2¾/2 13/16	2½/2 9/16
No. 1 Brown	6⅛/6⅜	2 13/16/2⅞	2 9/16/2 5/8
No. 2 Brown	6 /6¼	2¾/2 13/16	2½/2 9/16
Brown, rolled	5¾/6	2½/2 9/16	2¼/2 3/8
PONTIANAK			
Bandjermasin	6	5	5
Pressed block	10	7½	7
Sarawak	6	5	5
PARAS			
Upriver fine	8⅜	5¾	6
Upriver fine	*11¼	*8¾	*9¼
Upriver coarse	..	†2½	†2¾
Upriver coarse	*7⅝	*4⅝	*4¾
Islands fine	8	†5	†5¾
Islands, fine	*11	*8	*9
Acre, Bolivian, fine	8⅝	6	6⅛
Acre, Bolivian, fine	*11½	*8½	*9½
Beni, Bolivian	8⅝	6	6⅛
Maderia, fine	8⅜	5⅞	6

CAUCHO	June 26, 1931	May 25, 1932	June 25, 1932
Upper ball	..	†2½	†2¾
Upper ball	*7⅝	*4⅝	*4¾
Lower ball	..	†2	†2½
Manicobas			
Manicoba, 30% guar.	†5	†2½	†2
Mangabiera, thin sheet	†5	†2½	..
Guayule			
Duro, washed and dried	14	12	12
Ampar	15	13	13
Africans			
Rio Nuñez	..	8½	8½
Black Kassai	..	8¼	8¼
Manihot cuttings	..	6	6
Prime Niger flake	..	12	12
Accra flake	..	12	12
Gutta Percha			
Gutta Siak	10½	7½	7
Gutta Soh	19	16	15
Red Macassar	1.75	1.50	1.50
Balata			
Block, Ciudad Bolivar	26½	16	16
Colombia	..	....	....
Manaos block	28	16	16
Surinam sheet	52	32	32
Amber	54	35	35

*Washed and dried crepe. Shipment from Brazil. †Nominal.

Printing Rollers and Gaskets

Among the papers read at the semi-annual meeting of the American Institute of Chemical Engineers held June 15 and 16, 1932, at Schenectady, N. Y., was one on the suitability of a new synthetic substance for making printers' rollers and oil-proof gaskets. The merits of this new oil resisting material are indicated below.

The rubber rollers used in lithographic printing swell after an exposure of 4 weeks to printer's ink and can be used approximately 2 weeks after regrinding. Off-set rollers that last indefinitely are made of Glyptal, an alkyd resin product of the General Electric Co. It is the only material that has been found satisfactory for impression rollers. Both rubber and leather "beat down" and paper-covered rolls require constant repairing. The alkyd resin may be either extruded in the form of a tube and slipped over the mandrel or wound around it like a blanket.

In addition to lithographic rolls and blankets there are several other promising applications of alkyd resins. Some of these are oilproof gaskets, floor coverings especially for packing houses, and special sheeting for bal'onets of rigid airships; electric spaghetti; gasoline and oil hose; wire covering where oil resistance, dielectric strength, and corona resistance are important; and vibration absorption material for motor mountings or in the form of curtains for soundproof walls. Also, there is the possible use of the cast matererial for transparent films, besides replacing celluloid for tooth brushes.

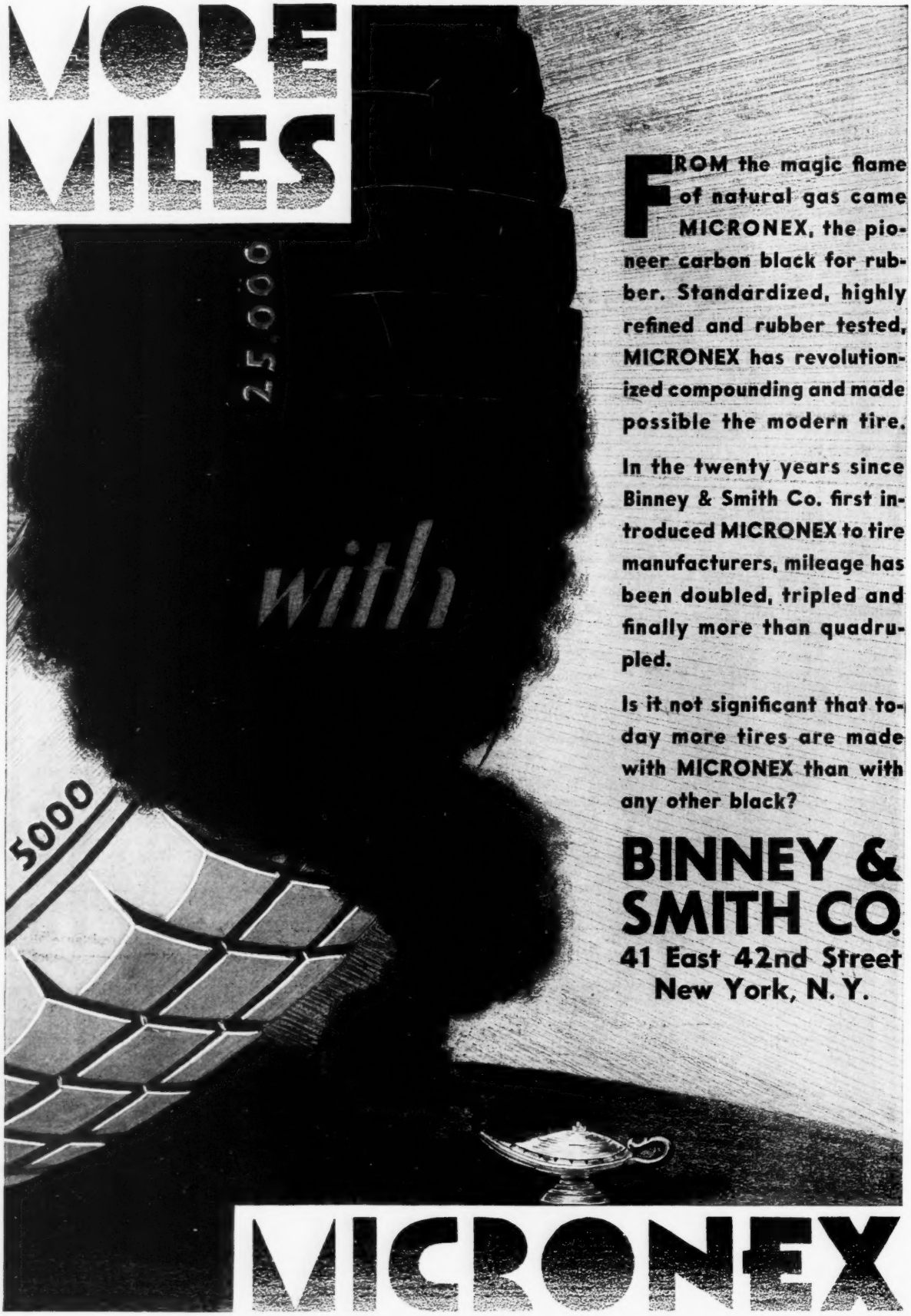
New York Outside Market (Continued)

	June, 1932					
	20	21	22	23	24	25
Ribbed Smoked Sheet	2¾	2¾	2 11/16	2 11/16	2 11/16	2 11/16
No. 1 Thin Latex Crepe	3 1/16	3 1/16	3 5/16	3 5/16	3 5/16	3 5/16
No. 1 Thick Latex Crepe	3 1/16	3 1/16	3 5/16	3 5/16	3 5/16	3 5/16
No. 1 Brown Crepe	2 11/16	2 11/16	2 5/8	2 5/8	2 5/8	2 5/8
No. 2 Brown Crepe	2 5/8	2 5/8	2 9/16	2 9/16	2 9/16	2 9/16
No. 2 Amber	2 11/16	2 11/16	2 5/8	2 5/8	2 5/8	2 5/8
No. 3 Amber	2 5/8	2 5/8	2 9/16	2 9/16	2 9/16	2 9/16
No. 4 Amber	2½	2½	2 7/16	2 7/16	2 7/16	2 7/16
Rolled Brown	2 7/16	2 7/16	2 3/8	2 3/8	2 3/8	2 3/8

Low and High New York Spot Prices in Cents Per Pound

	June		
PLANTATIONS	1932*	1931	1930
Thin latex crepe	3 1/16/3 1/16	6¾/7½	12½/14¼
Smoked sheet, ribbed	2 5/8/2¾	6⅛/7	11¾/13¾
PARAS			
Upriver fine	†5½	8⅛/8¾	14¼/15¼
Upper caucho ball	‡3	6½	7¼

* Figured to June 25, 1932. † Nominal. ‡ No stocks.



FROM the magic flame of natural gas came MICRONEX, the pioneer carbon black for rubber. Standardized, highly refined and rubber tested, MICRONEX has revolutionized compounding and made possible the modern tire.

In the twenty years since Binney & Smith Co. first introduced MICRONEX to tire manufacturers, mileage has been doubled, tripled and finally more than quadrupled.

Is it not significant that today more tires are made with MICRONEX than with any other black?

BINNEY & SMITH CO.
41 East 42nd Street
New York, N. Y.

Compounding Ingredients

THE demand for compounding ingredients by rubber goods manufacturers is greatly reduced below the usual seasonal requirements. Factories are being operated on minimum schedules of production although output in some lines is relatively active, notably in heels and specialties. Tire production holds at about a third of capacity output. This fact inevitably slows up the call for fabrics as well as compounding materials in general.

The list of colloidal compounding ingredients now available for use in latex includes "Premek" brands of 50% sulphur paste, 40% zinc oxide paste, 15% carbon black, latex stabilizer; also various colors such as iron oxide and chrome yellow.

For use in mill mixed stocks compounders are offered a new material designated by code as M O D X. It exerts a toughening action upon rubber, causes marked increase of tensile strength, and effects uniformity and standardization of cure.

ACCELERATORS. The low temperature accelerators, preferred by reason of their economy and activity, are enjoying moderately active business. The same may be said of mixed accelerators and similar specialties.

AGE RESISTERS. These are firmly established in favor as essential ingredients ranking in importance with accelerators and share with them equally in the moderate demand now existing.

ANTISCORCH. These materials are valuable adjuncts when extremely active low temperature accelerators are used, particularly in mixing and storing batches.

CARBON BLACK. The movement of standard carbon black is only fairly active, being regulated chiefly by the temporarily reduced requirements of tire manufacturers. The price holds steadily at 2¾¢ f. o. b. Texas. The ex-warehouse pound prices are 5¢ in bags, 5¾¢ in cartons, and 6¾¢ in cases.

LITHARGE. This long established ingredient for footwear and mechanicals is moving steadily at 5¾¢ a pound in casks.

LITHOPONE. Improved demand by tire makers is noted. Orders for 2-ton lots are priced at carload rates: namely, 4½-4¾¢ a pound.

SOFTENERS. The general utility softener and dispersing agent, Degras, is in moderate demand for rubber work. The market is fairly steady on this material. Stearic acid stabilizers and softeners are in fair demand for small amounts at prices that remain unchanged.

SOLVENTS. Both heavy and light grades declined in price ¼¢ a gallon to 6¢ on May 30. Group 3 refineries marked this price up to 6¼-6½¢ on June 13. The east coast market continued to quote 9¢ a gallon in tank cars.

TITANIUM PIGMENTS. The demand is active for these favorite whites, and the prices are firm at 6½ to 6¾¢ a pound.

ZINC OXIDE. Tire makers are seeking greater quantities. The price holds firm and steady.

New York Quotations

June 25, 1932

Prices Not Reported Will Be Supplied on Application

Abrasives			
Marble flour	*ton*	$16.00	
Pumicestone, pwd.	*lb.*	.02½/	$0.04
Rottenstone, domestic	*ton*	23.50 /	28.00
English	*lb.*		
Silica, spot	*lb.*	.01¼	
Accelerators, Inorganic			
Lime, hydrated	*ton*	20.00	
Litharge, com., pwd., casks	*lb.*	.05¾	
Magnesia, calcined, heavy	*lb.*	.04½	
carbonate	*lb.*	.05¾/	.06
Accelerators, Organic			
A-1 (Thiocarbanilid)	*lb.*	.21 /	.25
A-5-10	*lb.*	.31 /	.36
A-7	*lb.*	.50 /	.65
A-11	*lb.*	.57 /	.75
A-16	*lb.*	.53 /	.65
A-19	*lb.*	.53 /	.75
A-32	*lb.*	.70 /	.80
Aldehyde ammonia	*lb.*	.65 /	.70
Altax	*lb.*		
Barak	*lb.*		
BLE	*lb.*		
Butene	*lb.*		
Captax	*lb.*		
Crylene	*lb.*		
paste	*lb.*		
DBA	*lb.*		
Di-esterex N.	*lb.*		
DOTG	*lb.*	.42 /	.44½
DPG	*lb.*	.33 /	.40
Ethylidine aniline	*lb.*	.45 /	.47½
Formaldehyde aniline	*lb.*	.37½/	.40
Grasselerator 808	*lb.*		
833	*lb.*		
Guantal	*lb.*	.42 /	.51
Heptene			
base	*lb.*		
Hexamethylenetetramine	*lb.*	.40	
Hydrone	*lb.*		
Lead oleate, No. 999	*lb.*	.11	
Witco	*lb.*	.11	
Lithex	*lb.*		
Methylene dianiline	*lb.*		
Monex	*lb.*		
Novex	*lb.*		
Phenex	*lb.*	.50 /	.55
Pipsol X	*lb.*	3.55 /	4.00
Plastone	*lb.*		
R-2	*lb.*	1.55 /	1.90
Base	*lb.*	4.55 /	5.00
R & H 40	*lb.*		
50	*lb.*		
50-D	*lb.*		
397	*lb.*		
Retardex	*lb.*	.35	
Safex	*lb.*		
SPDX	*lb.*	.70 /	.75
Super-sulphur No. 1	*lb.*		
No. 2	*lb.*		
Tensilac 39	*lb.*	.40 /	.42½
Thermlo F	*lb.*		
Thiocarbanilid	*lb.*	$0.25 /	$0.27
Thionex	*lb.*		
TMTT	*lb.*		
Trimene	*lb.*		
base	*lb.*		
Triphenyl guanidine	*lb.*	.58 /	.60
Tuads	*lb.*		
Ulto	*lb.*	3.00	
Ureka	*lb.*	.60 /	1.00
C	*lb.*	.58 /	.69
Vulcanex	*lb.*		
ZBX	*lb.*		
Z-88-P	*lb.*	.46 /	.60
Zimate	*lb.*		
Acids			
Acetic 28% (bbls.)	100 *lbs.*	2.65 /	2.90
glacial (carboys)	100 *lbs.*	9.64 /	9.89
Sulphuric, 66°	*ton*	15.50	
Age Resisters			
Age-Rite Gel	*lb.*		
powder	*lb.*		
resin	*lb.*		
white	*lb.*		
Albasan	*lb.*		
Antox	*lb.*		
Flectol A	*lb.*	.54 /	.62
Oxynone	*lb.*	.66 /	.90
Permalux	*lb.*		
Resistox	*lb.*	.50 /	.65
Stabilite	*lb.*	.54	
Alba	*lb.*	.70 /	.75
VGB	*lb.*		
Zalba	*lb.*		
Antiscorch Materials			
UTB	*lb.*		
Antisun Materials			
Heliozone	*lb.*		
Sunproof	*lb.*		
Binders, Fibrous			
Cotton flock, dark	*lb.*	.08½/	.10
dyed	*lb.*	.50 /	.85
white	*lb.*	.11 /	.16
Rayon flock, white	*lb.*	1.40	
colored	*lb.*	1.75	
Colloidal Ingredients			
Catalpo	*ton*	55.00 /	60.00
Premek			
15% carbon black	*lb.*	.15 /	.18
50% sulphur paste	*lb.*	.23½/	.30
40% zinc oxide paste	*lb.*	.14 /	.18
COLORS			
Premek, iron oxide	*lb.*	.19 /	.22
Chrome yellow	*lb.*	.20 /	.32
Colors			
BLACK			
Bone, powdered	*lb.*	.05½/	.15
Drop	*lb.*	.05½/	.17
Lampblack (commercial)	*lb.*	.06 /	.08
BLUE			
Blue toners	*lb.*	.80 /	3.50
Brilliant	*lb.*	$3.50	
Prussian	*lb.*	.35 /	$0.37
Ultramarine	*lb.*	.06 /	.30
BROWN			
Iron oxide	*lb.*		
Mapico	*lb.*	.14 /	.15
Sienna, Italian, raw, pwd.	*lb.*	.04½/	.11
GREEN			
Brilliant	*lb.*	3.50	
Chrome, light	*lb.*	.23 /	.25½
medium	*lb.*	.26 /	.27½
Chrome oxide	*lb.*	.23 /	.25
Dark	*lb.*	1.30	
Green toners	*lb.*	.85 /	3.50
Light	*lb.*	.70	
ORANGE			
Cadmium sulphide	*lb.*		
Orange lake	*lb.*	.50	
Orange toners	*lb.*	.40 /	1.60
ORCHID			
Orchid toners	*lb.*	1.50 /	2.00
PINK			
Pink toners	*lb.*	1.50 /	4.00
PURPLE			
Permanent	*lb.*	1.80	
Purple toners	*lb.*	.60 /	2.00
RED			
Antimony			
Crimson, R. M. P. No. 3	*lb.*	.48	
Sulphur free	*lb.*	.52	
7-A	*lb.*	.35	
Z-2	*lb.*	.20	
Cadmium	*lb.*	.70 /	.80
Chinese	*lb.*	.85	
Crimson	*lb.*	.85	
Iron Oxides			
FER-OX brand, f.o.b. New Castle, Pa.	*lb.*	.08¼	
Rub-er-red	*lb.*	.08¼	
Softex	*lb.*	.08¼	
Mapico	*lb.*	.08½/	.09
Medium	*lb.*	.85	
Oxide, Spanish	*lb.*	.02¼	
Red toners	*lb.*	.80 /	2.00
Scarlet	*lb.*	1.50	
WHITE			
Lithopone	*lb.*	.04½/	.05
Albalith	*lb.*	.04½/	.04¾
Cryptone No. 19	*lb.*	.06¼/	.06¾
Cryptone CB No. 21	*lb.*	.06¼/	.06¾
Grasselli	*lb.*	.04¼/	.05
Titanium oxide, pure	*lb.*	.18 /	.20
Titanox "B"	*lb.*	.06½/	.07
"C"	*lb.*	.06½/	.07
Zinc Oxide			
Black label (lead free)	*lb.*	.05¼	
F. P. Florence, green seal	*lb.*	.09¼/	.09⅞
red seal	*lb.*	.08⅝/	.08⅞
white seal (bbls.)	*lb.*	.10⅞	
Green label (lead free)	*lb.*	.05¼	

Green seal, Anaconda	lb.	$0.09⅝/$0.10⅛
Horsehead (lead free) brand		
Selected	lb.	.05¾/ .06
Special	lb.	.05¾/ .06
XX	lb.	.05¾/ .06
green	lb.	.05¾/ .06
red	lb.	.05¾/ .06
Kadox, black label	lb.	.09⅝/ .09⅞
blue label	lb.	.08⅝/ .08⅞
red label	lb.	.07⅛/ .07½
Lehigh (leaded)	lb.	.05¼/ .05½
Red label (lead free)	lb.	.05¾
Red seal, Anaconda	lb.	.08⅝/ .09⅛
Standard (leaded)	lb.	.05½/ .05¾
Sterling (leaded)	lb.	.05½/ .05¾
Superior (leaded)	lb.	.05½/ .05¾
U. S. P. (bbls.)	lb.	.12¾
White seal, Anaconda	lb.	.10⅞/ .11⅛
XX zinc sulphide (bbls.)	lb.	.13
YELLOW		
Cadmium sulphide	lb.	.65 / .75
Chrome	lb.	.16
Lemon	lb.	1.50
Mapico	lb.	.11 / .12
Ochre, domestic	lb.	.01⅜/ .02½
Yellow toners	lb.	2.50
Deodorant		
Rodo	lb.	
Factice—See Rubber Substitutes		
Fillers, Inert		
Asbestine	ton	15.00 /16.00
Barytes, white, spot	ton	33.00 /35.00
off color, spot	ton	
Foam "A" (f.o.b. St. Louis)	ton	23.00
Blanc fixe, dry, precip.	ton	70.00 /75.00
pulp	ton	42.50 /45.00
Infusorial earth	ton	35.00 /47.00
Kalite No. 1	ton	30.00 /60.00
No. 3	ton	40.00 /70.00
Suprex white, extra light	ton	60.00 /80.00
heavy	ton	45.00 /55.00
Whiting		
Chalk, imported ...100	lbs.	.85 / 1.50
Precipitated	lb.	.03½/ .04
Domestic ...100	lbs.	1.00
Paris white, English cliffstone ...100	lbs.	1.75
Sussex	ton	
Witco	ton	20.00
Fillers for Pliability		
Flex	lb.	
Fumonex	lb.	.02½/ .06
P-33	lb.	
Thermax	lb.	
Velvetex	lb.	.02 / .05
Finishes		
Mica, amber	lb.	.04
Starch, corn, pwd 100	lbs.	2.34 / 2.54
potato	lb.	.07
Talc, dusting	ton	20.00 /25.00
Italian	lb.	.02¾
Pyrax A	ton	
Inflating Material		
Sponge paste	lb.	.30
Mineral Rubber		
Genasco (fact'y)	ton	40.00 /42.00
Gilsonite (fact'y)	ton	37.34 /39.65
Granulated M. R.	ton	
Hydrocarbon, hard	ton	
Parmr Grade 1	ton	23.00 /28.00
Grade 2	ton	23.00 /28.00
Mold Lubricants		
Rusco mold paste	lb.	.12 / .30
Sericite	lb.	
Soapbark (cut)	lb.	.06½/ .07
Soapstone	ton	15.00 /20.00
Oils		
Castor, blown	lb.	.11¾
Poppy seed oil	gal.	1.60
Red oil, distilled (bbls.)	lb.	.06⅝/ .07⅛
Protective Colloids		
Bentonite (dispersion clay)	lb.	.02¼
Casein, domestic	lb.	.05 / .06
Reenforcers		
Aluminum flake	ton	21.85 /24.50
Carbon Black		
Aerfloted arrow black	lb	.02¾
Arrow specification black	lb.	03
Century (works, c. l.)	lb.	.0285
Certified, Cabot, c. l.,		
f. o. b. works, bags	lb.	.02¾
c. l., f. o. b. works, cases	lb.	.04¼
l. c.-l., f. o. b. works	lb.	.0434
Disperso (works, c. l.)	lb.	.0285
Dixie brand	lb.	.02¾/ .06½
Elastex	lb.	.03½/ .08
Gastex (f. o. b. fact'y)	lb.	.02¼/ .06
Kosmos brand	lb.	.02¾/ .06½
Micronex	lb.	.03 / .05
Ordinary (compressed or uncompressed)	lb.	.02¾/ .07
Clays		
Bento	lb.	
Blue Ridge, dark	ton	
China	ton	7.50
Dixie	ton	
Dusto	lb.	
Langford	ton	
Lexo (works)	ton	
Par	ton	
Perfection	ton	8.00 /20.00
Standard	ton	$7.50
Suprex No. 1	ton	8.00
No. 2, dark	ton	6.50
Glue, high grade	lb.	.18 /$0.23
Rubber Substitutes or Factice		
Amberex	lb.	.15
Black	lb.	.06 / .08
Brown	lb.	.06 / .12
White	lb.	.08 / .12½
Softeners		
Burgundy pitch	lb.	.05
Cycline oil	lb.	.14 / .28
Degras	lb.	.03 / .04
Fluxol	ton	18.00 /80.00
Palm oil (Witco)	lb.	.08
Para-flux	gal.	.15
Petrolatum, light amber	lb.	.02⅝/ .02¾
Rosin oil, compounded	gal.	.30
Rubberseed, drums	lb.	
Rubtack	lb.	.10
Tackol	lb.	.08½/ .18
Tonox	lb.	
Witco Flux	gal.	.20
Solvents		
Benzol (90% drums)	gal.	.25
Carbon bisulphide (drums)	lb.	.05½/ .12
tetrachloride	lb.	.06¼/ .07
Dependip	gal.	
Dip-Sol	gal.	
Dryolene, No. 9	gal.	
Petrobenzol	gal.	
Rub-Sol	gal.	
Solvent naphtha (tanks)	gal.	$0.26
Stod-Sol	gal.	
Troluoil	gal.	
Turpentine, dest. distilled	gal.	.35
Stabilizers for Cure		
Laurex, ton lots	lb.	
Stearates		
Aluminum	lb.	
Calcium	lb.	
Magnesium	lb.	.23
Zinc	lb.	.23
Stearex B	lb.	.06½/ .10
flake	lb.	.06½/ .10
Stearic acid, dbl. pres'd	lb.	.08 / .12
Stabilizers for Latex		
Premek brand	lb.	.65
Statex A	lb.	.25
Vulcanizing Ingredients		
Sulphur chloride, drums	lb.	.03½/ .04
Telloy	lb.	
Vandex	lb.	

(See also Colors—Antimony)

Imports, Consumption, and Stocks

CONSUMPTION of crude rubber by manufacturers in the United States for May amounted to 29,197 long tons as compared with 25,953 long tons for April, 1932, an increase of 12.5%, according to The Rubber Manufacturers Association.

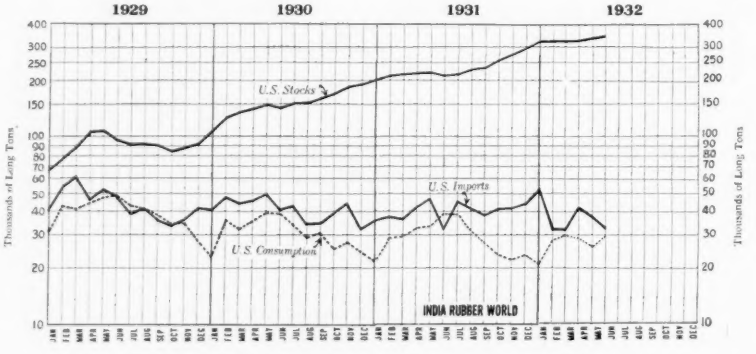
Imports of crude rubber for May totaled 32,224 long tons, a decrease of 12.9% below April but 1.6% above May a year ago.

Estimates for total domestic stocks of crude rubber on hand May 31, are 346,231 long tons, which compares with April 30 stocks of 343,098. May stocks increased 1% above April and 56.8% above the stocks of May 31, 1931.

Crude rubber afloat for United States ports was 50,453 long tons on May 31, 1932, which compares with 40,387 long tons afloat on April 30, and 55,173 long tons afloat on May 31, 1931.

London and Liverpool Stocks

Week Ended	Tons London	Tons Liverpool
May 28	56,504	60,148
June 4	55,535	60,119
June 11	54 636	59.551
June 18	52,636	58,601
June 25	51,785	58.441



United States Stocks, Imports, and Consumption

United States and World Statistics of Rubber Imports, Exports, Consumption, and Stocks

Twelve Months	U. S. Net Imports* Tons	U. S. Consumption Tons	U. S. Stocks on Hand† Tons	U. S. Stocks Afloat† Tons	United Kingdom Stocks†‡ Tons	Singapore and Penang, Etc., Stocks†‡ Tons	World Production (Net Exports)‡ Tons	World Consumption Estimated‡ Tons	World Stocks†‡§ Tons
1927	431,807	372,528	100,130	47,938	65,663	25,798	605,196	589,128	193,146
1928	446,421	442,227	66,166	68,764	22,691	32,905	649,674	667,027	122,828
1929	561,454	466,475	105,138	62,389	73,276	36,768	863,410	785,475	228,572
1930	488,343	375,980	200,998	56,035	118,297	45,179	821,815	684,993	366,034
1931	495,163	348,986	322,826	53,940	127,103	55,458	797,441	668,660	495,724
1932									
January	31,298	27,962	322,860	42,234	125,276	59,836	63.627	50,480	507.962
February	30,546	30.012	322,117	51.728	125,958	56,684	59.871	51.230	504,759
March	42,382	27,828	334,566	44.190	124.975	51,072	58,977	63,324	510.994
April	37.017	25,953	343,098	40,387	123,235	48,303	57,232	57,450	514,637
May	32,224	29,197	346,231	50,453	.....	.....	.....	.....	.....

*Including liquid latex, but not guayule. †Stocks on hand the last of the month or year. ‡W. H. Rickinson & Son's figures. §Stocks at the 3 main centers, U. S. A., U. K., Singapore and Penang.

Cotton and Fabrics

IN THE early part of June cotton prices fell precipitately to the lowest levels in the history of the Exchange. The June contract hit 4.85¢, and one must go back to about 1848 before a similar price is found. Prices subsequently climbed about ¼¢, but a spell of favorable weather would be enough to send them off again.

The heavy losses suffered by cotton largely resulted from outside influences. The failure of Congress to balance the budget, the fall of the Bruening government in Germany, the proposals for full payment of bonus certificates, and apprehension over "pork barrel" relief legislation, all played their part in unsettling the market.

When the political picture cleared somewhat, the weather news took the major role in the market. So far conditions have been fairly good, and the crop is pretty well along. Heavy rains in some sections have retarded the crop and brought out serious indications of boll weevil infestation, but the damage they will do must be determined by the weather in the next few weeks. Dry weather will minimize the threat, but wet weather will increase it.

Cotton consumption is also a disappointing obstacle in the path of better prices. Since January 1 the rate of consumption has fallen much more drastically than the curtailment in output, with the result that estimates for the season's takings of American cotton have been revised downward. Instead of 13,000,000 bales, it is now felt that only 12,500,000 bales will be consumed.

Week ended May 28. News of a good crop outlook and rain in several states where it was needed unsettled the market and induced liquidation which sent prices from 16 to 21 points lower for the week. Stock prices were also weak, and Congress did nothing to insure an early balancing of the budget.

July closed at 5.52¢ against 5.75¢ the week before; October 5.77 against 5.99; December 5.90 against 6.12; January 5.98 against 6.12; and March 6.13 against 6.35.

Cotton cloth production was sharply curtailed for the week ended May 21; the *Herald Tribune* index was 67.4 for that week against 75.9 for the previous week and 93.3 for the same week last year. The April statistics showing sales of about 50% of production were almost the worst on record.

"Two of the most cogent deductions from the data," says the Association of Cotton Textile Merchants of New York in commenting on the April figures, "are (1) that the drop in consumption since January 1 has been precipitate and has retrogressed at a more rapid rate than corrective declines in production; and (2) that henceforth, stop-gaps on productive activity ought to proceed at a ratio to sales sufficiently radical to discount further declines in the rate of consumption. The need, in other words, is for curtailment of production in every way as severe as has been recommended to the industry by its leaders, if the statistics are to become better balances in the next 60 days."

Prior to the holiday a dull market naturally was expected. But the weather news, announcement of a failure in Liverpool, and Washington news made it interesting.

Week ended June 4. This week's cotton market will go down in history—unless further declines overshadow those of this week. Middling upland spots in New York hit the lowest levels since 1848, and the June contract, dropping to 4.92¢, sold at the lowest price since the cotton exchange was organized in 1870. Short covering lifted the market from its extreme quotations, and the promise that Congress gave at the week-end of balancing the budget steadied the market.

COTTON BULL POINTS

1. May cotton exports were approximately 49% higher than for May last year. For 10 months exports are 26% above those of last season.
2. The Orient will probably spin 2,800,000 bales of cotton this year against 1,588,000 last season.
3. The Fossick Bureau reported boll weevil infestation was the worst since 1923.
4. Heavy rains, preventing farmers from weeding all their fields, have encouraged insect emergence.
5. Cotton ginned and pressed from September to May in India was 2,697,000 bales against 4,554,000 bales last season.
6. Evidence of how American cotton has supplanted Indian cotton was given when exports from India for September to May were shown to be 1,200,000 bales against 3,000,000 last season.
7. Fertilizer sales for the first 5 months of 1932 were 39% less than last year, indicating possibilities of a poorer and smaller crop.

COTTON BEAR POINTS

1. Sales of cotton cloth in May were 79.3% of production; shipments 92.9% of production; stocks increased 4.4%; unfilled orders were 11.3% lower; and production was 10.4% under April.
2. Because of the low consumption rate lately, estimates for the season's takings have been revised downward to 12,500,000 bales.
3. The cotton spinning industry operated at 63.3% capacity during May against 70.7% during April and 89.9% during May, 1931.
4. Cotton carryover will probably be over 13,000,000 bales on July 31 against 9,000,000 at the beginning of the season because of the low consumption.
5. The cheap cotton China can produce will take customers from United States mills, according to Joseph B. Thomas.
6. Cotton consumed during May was 332,439 bales of lint against 367,280 in April and 465,363 in May, 1931; for 10 months it was 4,269,664 bales against 4,365,042 in the same period last season.
7. A strike is imminent in Lancashire.
8. Estimates of acreage reduction have gone as low as 6% and not much higher than 10%.

New York Quotations

June 25, 1932

Drills	Cents
38-inch 2.00-yd. ..... yd.	$0.08⅛
40-inch 3.47-yd.	.04¾
50-inch 1.52-yd.	.10¾
52-inch 1.90-yd.	.08⅝
52-inch 2.20-yd.	.07⅜
52-inch 1.85-yd.	.08¾
Ducks	
38-inch 2.00-yd. D. F. ..... yd.	.08¼
40-inch 1.45-yd. S. F.	.11⅜
72-inch 1.05-yd. D. F.	.15¾
72-inch 16.66-oz.	.17¼
72-inch 17.21-oz.	.17¾
MECHANICAL	
Hose and belting ..... lb.	.17
TENNIS	
52-inch 1.35-yd. ..... yd.	.12
Hollands	
RED SEAL	
36-in. ..... yd.	.11
40-in.	.11½
50-in.	.17½
GOLD SEAL	
40-in., No. 72 ..... yd.	.14

Tire Fabrics	Cents
BUILDER	
17¼ oz. 60" 23/11 ply Karded peeler ..... lb.	$0.21
17¼ oz. 60" 10/5 ply Karded peeler ..... lb.	.19
CHAFER	
14 oz. 60" 20/8 ply Karded peeler ..... lb.	.21
12 oz. 60" 10/4 ply Karded peeler ..... lb.	.17
9¼ oz. 60" 20/4 ply Karded peeler ..... lb.	.23
9¼ oz. 60" 10/2 ply Karded peeler ..... lb.	.19
CORD FABRICS	
23/5/3 Karded peeler, 1 1/16" cotton.. lb.	.21
23/4/3 Karded peeler, 1 1/16" cotton.. lb.	.23
15/3/3 Karded peeler, 1 1/16" cotton.. lb.	.19
13/3/3 Karded peeler, 1 1/16" cotton lb.	.18
7/2/2 Karded peeler, 1 1/16" cotton.. lb.	.17
23/5/3 Karded peeler, 1¼" cotton.. lb.	.27
23/5/3 Karded Egyptian, Egyptian upper cotton ..... lb.	.33
23/5/3 Combed Egyptian ..... lb.	.38
LENO BREAKER	
8¼ oz. and 10¼ oz. 60" Karded peeler ..... lb.	.21

Osnaburgs	Cents
40-in. 2.35-yd. ..... yd.	$0.06¾
40-in. 2.48-yd.	.06⅜
40-in. 3.00-yd.	.05⅛
40-in. 10-oz. part waste	.10
40-in. 7-oz.	.07
37-in. 2.42-yd.	.06⅝
Raincoat Fabrics	
COTTON	
Bombazine 64 x 60 ..... yd.	.07¾
Bombazine 60 x 48	.07¼
Plaids 60 x 48	.08¾
Plaids 48 x 48	.07¾
Surface prints 60 x 60	.09¼
Surface prints 60 x 48	.09
Print cloth, 38½-in., 64 x 60	.03¼
Print cloth, 38½-in., 60 x 48	.02¾
SHEETINGS, 40-INCH	
48 x 48, 2.50-yd. ..... yd.	.04½
48 x 48, 2.85-yd.	.04
64 x 68, 3.15-yd.	.04⅞
56 x 60, 3.60-yd.	.04⅛
44 x 48, 3.75-yd.	.03½
44 x 40, 4.25-yd.	.03⅛
SHEETINGS, 36-INCH	
48 x 48, 5.00-yd. ..... yd.	.02¾
44 x 40, 6.15-yd.	.02¼

At the close on Saturday, June was 5.22¢ against 5.43 at the end of the previous week; July 5.32 against 5.52; October 5.54 against 5.77; December 5.68 against 5.90; March 5.93 against 6.13; and May 6.08 against 6.20.

Losses of 49 to 55 points on Tuesday and Wednesday were responsible for the lowest prices in 30 years. Over the holiday week-end weather news was favorable to the crop; there was still doubt as to whether Congress would balance the budget promptly; and the overthrow of the Bruening government in Germany caused apprehension.

Following the President's personal appearance before Congress to urge prompt action on the budget, both branches buckled to their jobs, and on Friday the billion dollar budget bill was reported out of the Senate, and on Saturday it had been approved by a joint committee. News that a group of large banking houses in New York had organized to operate in the bond market was hailed as the kind of constructive action the business situation needed. On Saturday, therefore, quotations were $1 per bale better.

Private estimates of acreage reduction all average under 10%. The crop, however, will probably be short. Fertilizer sales in 7 important states were 847,000 short tons from December 1 to May 31 against 1,473,000 last season.

The low prices naturally caused consternation in the gray goods market, and trading was almost halted. Production of cotton cloth declined sharply in the week ended May 28, with the *Herald Tribune* index at 64.3 against 67.4 for the preceding week and 94.5 for the same week last year. If the present rate of curtailment continues, with the movement spreading in the Southern mills, it is probable that output will soon be no more than 40% of normal.

Week ended June 11. The slight advance in prices registered last Saturday was short lived. Losses of 18 to 20 points erased most of last week's gain, and news of good weather, crop improvement, and apprehension over the form which relief measures might take continued cotton's fall. On Thursday the climax came when prices hit the lowest levels in 34 years. June contracts sold at 4.85¢ against 4.98 in 1898; spot quotations were 5¢ against 5⅜¢ 34 years ago. Closing prices were the lowest in the history of the Exchange.

June closed at 4.91¢ against 5.22 last week; July 4.97 against 5.32; October 5.22 against 5.54; December 5.37 against 5.68; January 5.43 against 5.75; and March 5.59 against 5.93.

The weather was generally favorable over the belt except that toward the end of the week steady rains fell over Texas. In the Southwestern part of the belt weevil emergence is said to be heavy. A report by the American Cotton Crop Service said that heavy weevil infestations were appearing in the southern half of the belt from Louisiana eastward. Clemson College, S. C., announced that weevils in some fields ranged up to 1,000 an acre. If the wet weather continues in June, the weevil menace may become serious.

The New York Cotton Exchange Service announced consumption in May by domestic mills to be 342,000 bales, against 367,000 in April, and 465,000 in May last year. Daily consumption averaged 14,400 bales against 19,600 in May, 1931. Last week forwardings of American cotton to mills of the world were 166,000 bales against 181,000 last year. Exports were 99,000 bales last week compared with 47,000 last year.

WEEKLY AVERAGE PRICES OF MIDDLING COTTON

Week Ended	Cents per Pound
May 28	5.72
June 4	5.23
June 11	5.11
June 18	5.25
June 25	5.31

The International Statistical Bureau estimated a cotton crop of 12,809,000 bales for 1932-1933, based on indications as of May 31. The condition of the crop was put at 71% of normal against the 10-year average of 74.6%. An acreage cut of 8.5% less than last year was indicated.

The cotton cloth index of the *Herald Tribune* was 69.9 for the week ended June 4 against 64.3 for the preceding week, and 94.7 for the same week last year. The sharp decline in prices of raw cotton unsettled the goods market somewhat, but prices have remained firm. The New York Cotton Exchange Service estimated that sales were probably below the curtailed rate of production.

Week ended June 18. Heavy rains in the eastern belt early in the week accounted for most of the gains of 10 to 17 points registered during the week. The weekly weather report of the Weather Bureau on Wednesday read that conditions have been favorable to boll weevil development in many places. Private reports emphasized this condition. But on Friday and Saturday the market turned downward on more favorable weather news and a weaker tone in stocks.

At the close June sold at 5.06¢ against 4.91¢ the previous week; July 5.12 against 4.97; October 5.32 against 5.22; December 5.52 against 5.37; March 5.76 against 5.59; and May 5.91 against 5.74.

The New York Times' index of cotton cloth production declined to 68.0 for the June 13 week against 69.9 for the preceding week and 94.2 for the same week last year. In the face of this sharp curtailment the New York Cotton Exchange Service said that sales were at least equal to production. It also said that domestic mill consumption of raw cotton was 56% of estimated pre-depression normal.

Week ended June 25. Weather conditions were largely responsible for the day to day fluctuations in the last week. Heavy rains in the eastern belt and in Oklahoma and Texas brought out reports of heavy weevil infestation. Fields in many places were becoming full of grass because the rainy weather prevented farmers from working them.

At the close on Friday, July was 5.15¢ against 5.12¢ the week previous; October 5.40 against 5.37; December 5.55 against 5.52; January 5.64 against 5.60; March 5.79 against 5.76; May 5.94 against 5.91.

The various weevil reports received during the week were as follows: The Fossick Bureau said infestation was the worst since 1923; the Oklahoma Agricultural College said that weevils averaged 33.8 to the acre in 23 fields examined in 8 counties against 19.5 last year and 12, 2 years ago; the Mississippi Planting Board predicted the heaviest boll weevil damage in many years if weather continues favorable to the insect; from Fayetteville, Ark., comes word that weevils are heaviest since 1923; and Clemson College, S. C., declares weevils are increasing in that state.

The first bale of new cotton was reported picked in the Rio Grande valley on June 16, about 10 days earlier than last year, but this indication that the new crop would soon get under way did not affect the old crop to any degree. The movement will not be at its height for a couple of months.

Production of cotton cloth during May was 10.4% less than the April rate, according to the Association of Cotton Textile Merchants of New York. Sales were 79.3% of production; shipments 92.8% of output; stocks on hand at the end of the month were 4.4% higher; and unfilled orders dropped 11.3%.

Because of the low rate of consumption of American cotton, the Cotton Exchange Service revised its estimates for the season, and forecast that consumption of American staple for the season will be only 12,400,000 or 12,500,000 bales, against earlier estimates of 13,000,000 bales. The United States accounts for most of the drop in takings, and estimates are that consumption here will be only 4,700,000 bales, against 5,084,000 last season.

Cotton Fabrics

Ducks, Drills, and Osnaburgs. There is little, if anything, of importance in connection with the current market for cotton fabrics. The rubber trade demand is not large, and such goods as are wanted are being bought for immediate or nearby delivery.

It is important to note that there is being created a shortage in cotton goods of all descriptions because of the fact that cotton mills have been running several months on the basis of actual contract commitments and not on stock in excess of orders. This action is rapidly developing a short condition which will seriously interfere later with consumers' ability to obtain enough merchandise to permit proper operations unless the buying trade awakens to this condition and covers its requirements sufficiently in advance to insure deliveries when the goods are actually needed.

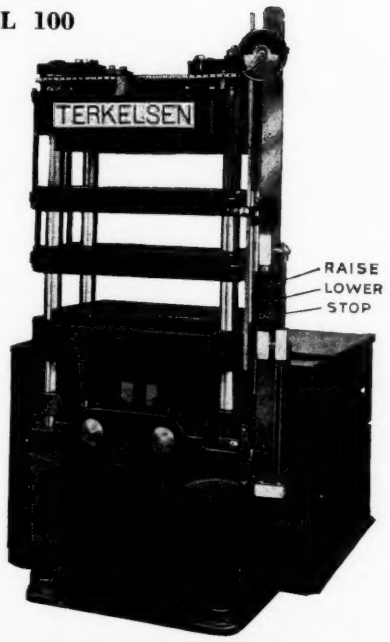
Raincoat Fabrics. Raincoat manufacturers report that the general trade is just starting to buy in a small way for the next fall season and expect to resume full production within a few weeks.

Sheeting. For the past 30 days the market for sheeting has been very quiet because of the inactivity of converters and manufacturers.

Tire Fabrics. Tire fabric business is said to have improved slightly, but orders are less than seasonal. Small companies have had occasion to come into the open market to replenish their stocks on cords and chafers.

TERKELSEN

TYPE E-2
MODEL 100



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The ELECTRO-DRAULIC has set a new standard in press equipment. They possess features impossible on other types of equipment.

Self-Contained Molding Unit
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Perfect Pressure Application
No Valves, No Packings, No Water Lines
No Accumulators, No Pumps

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Regular and Special Constructions
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COTTON FABRICS

Single Filling Double Filling
and

ARMY
Ducks

HOSE and BELTING
Ducks

Drills

Selected
Osnaburgs

Curran & Barry
320 BROADWAY
NEW YORK

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

No.	Inquiry
1492	Manufacturer of casein.
1493	Manufacturer of hard rubber pans and tools to mix explosives.
1494	Manufacturer of rubber grommets.
1495	Manufacturer of rubber suction cups.
1496	Manufacturer of teething rings.
1497	Manufacturer of small sponge rubber balls.
1498	Manufacturer of small 2-cylinder machine for embossing designs on rubber soles.

Foreign Trade Information

For further information concerning the inquiries listed below address United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Room 734, Custom House, New York, N. Y.

Number	Commodity	City and Country
*57,777	Raincoat material	Florence, Italy
†57,778	Automobile tires and mechanical articles	Leipzig, Germany
†57,800	Thread	St. Etienne, France
†57,801	Soles and heels	Milan, Italy
*57,802	Toys	Edmonton, Canada
*57,820	Belting	Turin, Italy
†57,883	Puncture-proof tubes	Copenhagen, Denmark
*57,884	Ribbed smoked sheet	Santiago, Chile
*57,964	Raincoats, batning shoes, and novelties	Toronto, Canada
†57,965	Scrap and old rubber	Barcelona, Spain
†57,966	Belting	Barcelona, Spain
†58,005	Hose	Bombay, India
†58,032	Tires	Aleppo, Syria
†58,049	Steam packings	Buenos Aires, Argentina
*58,088	Rubber bands	Amsterdam, Netherlands
†58,130	Erasers	Vienna, Austria
†58,133	Matting	Goteborg, Sweden
*58,134	Women's rubberettes	Montreal, Canada
*†58,162	Athletic and sport goods	Medan, Sumatra
†58,163	Waterproofed clothing, raincoats, and hospital sheeting	Bergen, Norway
*58,168	Sport goods	Bilbao, Spain
†58,174	Druggists' sundries	Sao Paulo, Brazil
*†58,220	Automobile tires	Malmo, Sweden
*58,252	Used cord tires	Chefoo, China
*58,253	Sponge rubber and nonvulcanized stamp rubber	Leipzig, Germany
*58,337	Surgical goods	London, England
*58,339	Sport goods	Belgaum, India
*58,367	Sponge rubber for masks and goggles	Turin, Italy

*Purchase. †Agency. *†Purchase and agency.

U. S. Crude and Waste Rubber Imports for 1932

	Plantations	Latex	Paras	Africans	Centrals	Guayule	Manicoba and Matto Grosso	Totals 1932	Totals 1931	Balata	Miscellaneous	Waste
Jan. .....*tons*	30,847	271	142	38	..	..	..	31,298	37,098	53	731	50
Feb.	30,041	361	144	..	..	..	..	30,546	36,645	98	689	..
Mar.	41,753	335	240	54	..	..	..	42,382	40,338	65	754	25
Apr.	36,390	516	111	..	..	..	..	37,017	46,648	35	421	..
May	32,030	82	81	31	..	..	..	32,224	31,720	72	645	30
Total, 5 mos., 1932 ....*tons*	171,061	1,565	718	123	..	..	..	173,467	.....	323	3,240	105
Total, 5 mos., 1931 ....*tons*	188,192	1,468	2,708	80	1	..	..	.....	192,449	510	3,698	100

Compiled from The Rubber Manufacturers Association, Inc., statistics.

Tire Production Statistics

	Pneumatic Casings—All Types: Inventory	Production	Total Shipments		Solid and Cushion Tires: Inventory	Production	Total Shipments
1929	9,470,368	54,980,672	55,515,884	1929	122,200	407,347	436,027
1930	7,202,750	40,772,378	42,913,108	1930	75,871	204,340	250,635
1931	6,219,776	38,992,220	40,048,552	1931	38,815	136,261	167,555
1932				1932			
Jan.	6,329,417	2,769,988	2,602,469	Jan.	37,327	8,522	9,488
Feb.	7,337,796	3,096,976	2,042,289	Feb.	37,242	9,754	9,541
Mar.	7,902,258	2,936,872	2,363,232	Mar.	36,811	8,796	9,205
Apr.	7,876,656	2,813,489	2,958,104	Apr.	35,816	7,980	8,436

	Inner Tubes—All Types: Inventory	Production	Total Shipments		Cotton and Rubber Consumption Casings, Tubes, Solid and Cushion Tires: Cotton Fabric Pounds	Crude Rubber Pounds	Consumption of Motor Gasoline (100%) Gallons
1929	10,245,365	55,062,886	56,473,303	1929 ...	208,824,653	598,994,708	14,748,552,000
1930	7,999,477	41,936,029	43,952,139	1930 ...	158,812,462	476,755,707	16,200,894,000
1931	6,337,570	38,666,376	40,017,175	1931 ...	151,143,715	456,615,428	16,941,750,000
1932				1932			
Jan.	6,175,055	2,718,508	2,803,369	Jan. ...	12,156,282	36,850,171	1,112,370,000
Feb.	7,007,567	3,056,988	2,182,405	Feb. ...	12,518,243	39,472,356	1,071,840,000
Mar.	7,558,177	2,801,602	2,148,899	Mar. ..	11,292,363	36,202,474	1,236,942,000
Apr.	7,552,674	2,579,768	2,708,186	Apr. ...	11,083,556	35,416,482	1,270,080,000

Rubber Manufacturers Association, Inc., figures representing 80% of the industry since January, 1929, with the exception of gasoline consumption.

British Malaya

An official cable from Singapore to the Malayan Information Agency, Malaya House, 57 Charing Cross, London, S.W.1, England, gives the following figures for May, 1932:

Rubber Exports

Ocean Shipments from Singapore, Penang, Malacca, and Port Swettenham

To	May, 1932: Sheet and Crepe Rubber Tons	Latex Concentrated Latex and Revertex Tons
United Kingdom	6,809	145
United States	25,849	126
Continent of Europe...	3,854	46
British possessions	1,225	...
Japan	1,723	...
Other countries	520	...
Totals	39,980	317

Rubber Imports

Actual Imports by Land and Sea

From	May, 1932: Dry Rubber Tons	Wet Rubber Tons
Sumatra	479	2,462
Dutch Borneo	177	1,251
Java and other Dutch Islands.	97	36
Sarawak	586	9
British Borneo	89	19
Burma	176	7
Siam	78	40
French Indo-China	120	10
Other countries	37	4
Totals	1,839	3,838

World Rubber Shipments—Net Exports

British Malaya	Long Tons—1932: Feb.	Mar.	Apr.	May
Gross exports	42,008	39,903	36,670	40,297
Imports	8,008	6,658	4,682	5,677
Net	34,000	33,245	31,988	34,620
Ceylon	4,533	*3,405	*3,046	*4,140
India and Burma	803	284	365	.....
Sarawak	696	501	459	595
British No. Borneo	*500	*500	*500	*500
Siam	334	217	130	128
Java and Madura	4,814	4,946	6,722	.....
Sumatra E. Coast	6,011	6,863	6,090	.....
Other N. E. Indies	6,325	6,252	4,856	.....
French Indo-China	1,060	*928	*913	*949
Amazon Valley	352	715	487	416
Other America	.....	.....	.....	.....
Guayule	.....	.....	.....	.....
Africa	*100	*100	*100	*100
Totals	59,528	57,956	55,656	.....

* Estimate.
Compiled by Rubber Division, Department of Commerce, Washington, D. C.

London Stocks, April, 1932

London	Landed Tons	Delivered Tons	Stocks, April 30: 1932 Tons	1931 Tons	1930 Tons
Plantation	4,059	6,485	61,794	86,881	74,590
Other grades	5	11	54	50	43
Liverpool					
Plantation	*2,399	*1,707	*61,387	*51,879	*23,849
Total tons, London and Liverpool	6,463	8,203	123,235	138,810	98,482

*Official returns from the recognized public warehouses.

Estate Rubber Production in British Borneo

Statistics for 26 estates in British Borneo during the first 4 months of 1932 show a production of 1,372 tons, a reduction of 12.5% from 1931, which was in turn a reduction of 14.2% from 1930. Estate production in British Borneo has declined gradually but rather steadily.

Rubber Scrap

WITH 800 junk dealers in Chicago reported out of business, an idea may be gained of how little money there is at present in the collection of scrap rubber. Present prices are so low that they only cover the cost of freight and cartage, leaving practically nothing to collectors.

Because of the excise tax on tires a slight increase in consumption of scrap was registered along with the effort by tire dealers to get in a stock before the tax was imposed. That activity soon died down, and the market again turned dull.

BOOTS AND SHOES. In May junk dealers refused to collect this class of scrap because of starvation returns. During June the situation was even worse, with a large number of junk dealers going out of business altogether. Prices showed no change because they are too low as it is.

INNER TUBES. Red tubes still command most of the business among inner tubes, but after holding steady last month, prices during June were shaded a fraction. If the supply of red tubes were more plentiful, the price would probably fall to the level of the other grades. Gray tubes were responsible for little business; while the demand for floating tubes gradually approaches the vanishing point.

TIRES. Sharp price declines were registered in scrap tire prices. Beads sold off 50¢, and auto tire carcass off $1.25 to $1.50. Truck tires dropped from $1.00 to $2.00 in price. The lack of demand for these grades is responsible for the fall in prices.

MECHANICALS. No step-child was ever neglected more than mechanicals in June. Duplicating last month, not a single price change was registered in this class.

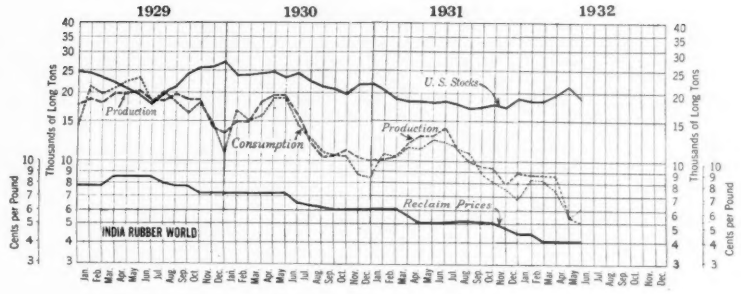
HARD RUBBER. Demand was pretty good for hard rubber, but not enough to raise the price, which is quoted the same as last month.

No improvement is expected in the prevailing dull market.

CONSUMERS' BUYING PRICES
Carload Lots Delivered Eastern Mills
June 25, 1932

	Prices
Boots and Shoes	
Boots and shoes, black..100 lb.	$0.75/$1.00
Colored .....100 lb.	.625 /.75
Untrimmed arctics.....100 lb.	.50
Inner Tubes	
No. 1, floating .....lb.	.03 /.03⅛
No. 2, compound .....lb.	.01¼/.01⅜
Red .....lb.	.01½/.01⅝
Mixed tubes .....lb.	.01⅛/.01¼
Tires	
Pneumatic Standard	
Mixed auto tires with beads .....ton	7.00/ 7.50
Beadless .....ton	11.00/11.75
Auto tire carcass .....ton	10.00/10.50
Black auto peelings ...ton	19.00/19.50
Solid	
Clean mixed truck.....ton	23.00/24.00
Light gravity .....ton	28.00/29.00
Mechanicals	
Mixed black scrap .....lb.	.00⅝/.00¾
Hose, air brake .....ton	7.50/ 8.00
Garden, rubber covered lb.	.00¾/.00⅞
Steam and water, soft..lb.	.00⅜/.00½
No. 1 red .....lb.	.01⅛/.01¼
No. 2 red .....lb.	.01 /.01⅛
White druggists' sundries. lb.	.01¼/.01½
Mechanical .....lb.	.00¾/.00⅞
Hard Rubber	
No. 1 hard rubber .....lb.	.07½/.07¾

Reclaimed Rubber



Production, Consumption, Stocks, and Price of Tire Reclaim

United States Reclaimed Rubber Statistics—Long Tons

Year	Production	Consumption	Consumption Per Cent to Crude	United States Stocks*	Exports
1925	132.930	137,105	35.6	13.203	4,571
1926	180.582	164,500	45.9	23,218	5,391
1927	189,144	178,471	47.6	24,980	8,540
1928	208.516	223,000	50.4	24,785	9,577
1929	219.057	224,253	47.9	27,464	12,721
1930	157.967	153,497	41.5	24.008	9,468
1931	132,462	125,001	35.7	19,257	6.971
1932					
January	8.753	8,440	30.2	18,712	475
February	8.731	8,332	27.6	18,659	484
March	8,613	7.420	26.7	19,726	476
April	5,555	5,561	21.4	21,525	370
May	5.024	6,070	20.8	18,889	188

*Stocks on hand the last of the month or year.
Compiled by The Rubber Manufacturers Association, Inc.

ALTHOUGH the ratio of reclaim to crude declined to 20.8% in May from 21.4% in April, this showing was not considered bad. The drop from March to April was 5.3% against only 0.6% from April to May.

Consumption in May, moreover, not only increased over April, but it was 1,000 tons above production, thus bringing down the stocks on hand. June consumption is estimated to be even better than that for May.

Automobile accessory manufacturers accounted for a fairly good volume of business during the last month, largely because of the increased activity among manufacturers of low-priced cars, and the spurt in business which resulted when tire makers announced an increase in tire prices effective June 21.

Molded hose manufacturers and insulated wire manufacturers also registered a fair amount of business.

A significant trend among manufacturers at present is their efforts to cut costs to the bone. They are examining expense items in a detailed manner that they would have scorned a few years ago; and as they delve into the details, they are learning much. One fact that comes to light is that costs are not what they seem on the surface. A manufacturer today can buy crude rubber cheaper than reclaim. But when he analyzes the cost of power, the cost of the men who mix the compounds, the time consumed, he discovers that even though reclaim is higher in its first cost, it saves more money eventually in overhead items which figure larger in the final analysis than the cost of raw materials.

Another thing manufacturers have found in analyzing the merits of crude and reclaim is that with reclaim a more uniform product is possible; and if they abandon this smooth finish through the use of crude altogether, they will have to do much explaining. The insurance against changes in finished quality assured by reclaim is sure to count in its favor in the long run.

New York Quotations

June 25, 1932

	Spec. Grav.	Cents per Lb.
High Tensile		
Super-reclaim, black	1.20	5 /5¼
red	1.20	4¾/5
Auto Tire		
Black	1.21	3¾/4
Black selected tires.....	1.18	4 /4¼
Dark gray	1.35	5 /5¼
White	1.40	5½/5¾
Shoe		
Unwashed	1.60	4¾/5
Washed	1.50	5½/5¾
Tube		
No. 1	1.00	6½
No. 2	1.10	4½/4¾
Truck Tire		
Truck tire, heavy gravity .	1.55	5 /5¼
Truck tire, light gravity...	1.40	5¼/5½
Miscellaneous		
Mechanical blends	1.60	3 /3½

United States Statistics

Imports of Crude and Manufactured Rubber

	March, 1932		Three Months Ended March, 1932	
UNMANUFACTURED—*Free*	Pounds	Value	Pounds	Value
Crude rubber	101,241,571	$4,251,801	238,284,786	$10,329,556
Liquid latex	875,969	44,585	2,601,390	137,380
Jelutong or pontianak	1,029,303	59,299	3,698,420	225,609
Balata	254,927	20,628	601,604	59,425
Gutta percha	34,235	1,779	67,770	7,841
Siak, scrap, and reclaimed	520,410	5,718	1,460,296	16,705
Totals	103,956,415	$4,383,810	246,714,266	$10,776,516
Chicle, crude—*Free*	780,987	$340,103	1,761,393	$771,677
MANUFACTURED—*Dutiable*				
Tires—*number*	913	$5,116	2,396	$12,010
Other rubber manufactures	.....	60,553	.....	156,580
Totals	.....	$65,669	.....	$168 590

Exports of Foreign Merchandise

RUBBER AND MANUFACTURES				
Crude rubber	5,060,633	$243,800	13,073,908	$655,124
Balata	4,144	563	48,399	14,967
Gutta percha, rubber substitutes, and scrap	2,644	392	3,149	687
Rubber manufactures	.....	1,449	.....	2,152
Totals	.....	$246,204	.....	$672,930

Exports of Domestic Merchandise

RUBBER AND MANUFACTURES				
Reclaimed	1,066,955	$39,465	3,217,042	$139,412
Scrap and old	5,459,435	90,171	16,250,317	267,720
Rubberized automobile cloth—*sq. yd.*	51,377	18,896	136,025	50,297
Other rubberized piece goods and hospital sheeting—*sq. yd.*	54,671	18,620	163,671	53,611
Footwear				
Boots—*pairs*	7,074	12,192	40,163	86,696
Shoes—*pairs*	26,746	11,895	54,130	28,473
Canvas shoes with rubber soles—*pairs*	36,252	19,831	80,745	47,765
Soles—*doz. pairs*	2,243	4,590	7,155	14,885
Heels—*doz. pairs*	37,353	21,291	98,852	61,229
Water bottles and fountain syringes—*number*	19,848	6,741	47,314	16 806
Gloves—*doz. pairs*	6,283	13,107	14,085	31,178
Other druggists' sundries	.....	34,284	.....	82,610
Balloons—*gross*	30,378	27,609	101,209	81,103
Toys and balls	.....	3,944	.....	8,192
Bathing caps—*doz.*	10,685	20,411	15,541	29,410
Bands	35,712	10,616	90,647	27,668
Erasers	27,090	17,162	74,819	45,948
Hard rubber goods				
Electrical goods	50,423	4,399	230,260	28,289
Other goods	.....	10,800	.....	28,992
Tires				
Truck and bus casings, *number*	20,693	338,001	53,423	875,232
Other automobile casings, *number*	74,847	477,537	184,400	1,340,348
Tubes, auto—*number*	60,339	62,171	156,504	174,221
Other casings and tubes, *number*	7,041	8,396	10,780	16,415
Solid tires for automobiles and motor trucks—*number*	867	20,886	2,687	68,170
Other solid tires	151,945	19,447	451,319	55,715
Tire sundries and repair materials	.....	58,305	.....	140,553
Rubber and friction tape	50,406	12,340	186,549	43,884
Belting	135,111	59,760	398,741	171,538
Hose	273,896	65,066	765,607	201,956
Packing	79,962	28,409	238,585	89,650
Thread	107,659	68,664	319,146	201,513
Other rubber manufactures	.....	77,261	.....	234,599
Totals	.....	$1,682,267	.....	$4,744,078

Imports by Customs Districts

Crude rubber including latex dry rubber content

	April, 1932		April, 1931	
	Pounds	Value	Pounds	Value
Massachusetts	5,965,269	$238,406	4,334,184	$367,123
New York	67,425,085	2,542,155	81,451,560	6,393,105
Philadelphia	369,600	12,887	3,514,495	243,944
Maryland	1,245,988	39,315	1,183,164	73,941
Georgia	586,333	19,597	825,428	62,358
Los Angeles	9,312,375	337,191	9,026,504	622,434
San Francisco	951,969	26,569	136,804	14,267
Oregon	11,200	570	.....	.....
Hawaii	.....	.....	224	21
Ohio	216	9	10,350	1,781
Colorado	268,800	11,041	112,000	7,834
Totals	86,136,835	$3,227,740	100,594,713	$7,786,808

Dominion of Canada Statistics

Imports of Crude and Manufactured Rubber

	March, 1932		Twelve Months Ended March, 1932	
UNMANUFACTURED	Pounds	Value	Pounds	Value
Rubber, gutta percha, etc.	5,796,594	$278,716	55,258,014	$3,565,260
Rubber, recovered	1,076,800	46,319	9,180,700	426,171
Rubber and gutta percha scrap	260,300	5,521	2,337,100	46,876
Balata	2,913	556	11,376	7,594
Rubber substitute	29,200	4,411	301,600	39,021
Totals	7,165,807	$335,523	67,088,790	$4,084,922
PARTLY MANUFACTURED				
Hard rubber sheets and rods	1,447	$990	15,997	$10,711
Hard rubber tubes	.....	1,733	.....	6,548
Rubber thread not covered	35,105	28,589	261,500	210,614
Totals	36,552	$31,312	277,497	$227,873
MANUFACTURED				
Belting	.....	$5,499	.....	$75,461
Hose	.....	8,642	.....	63,266
Packing	.....	4,743	.....	48,054
Boots and shoes—*pairs*	13,163	2,167	56,993	18,491
Clothing, including waterproofed	.....	924	.....	48,203
Raincoats—*number*	4,491	11,991	23,023	65,183
Gaskets	.....	.....	.....	.....
Gloves	.....	1,361	.....	16,901
Hot water bottles	.....	5,060	.....	30,234
Tires, bicycle—*number*	4,627	2,023	46,799	22,665
Pneumatic—*number*	653	6,474	36,853	239,645
Inner tubes—*number*	210	961	10,099	11,182
Solid for automobiles and motor trucks—*number*	59	2,641	626	24,284
Other solid tires	.....	1,494	.....	25,014
Mats and matting	.....	2,382	.....	31,487
Cement	.....	7,113	.....	61,000
Golf balls—*dozen*	4,119	12,669	39,749	119,411
Heels—*pairs*	12,544	1,159	446,851	15,008
Other rubber manufactures	.....	94,472	.....	1,043,424
Totals	.....	$171,775	.....	$1,958,913
Totals, rubber imports	.....	$538,610	.....	$6,271,708

Exports of Domestic and Foreign Rubber Goods

UNMANUFACTURED	Produce of Canada Value	Reexports of Foreign Goods Value	Produce of Canada Value	Reexports of Foreign Goods Value
Waste rubber	$2,943	.....	$42,306	.....
MANUFACTURED				
Belting	$15,459	.....	$261,374	.....
Canvas shoes with rubber soles	101,251	.....	1,508,835	.....
Boots and shoes	101,128	.....	2,102,682	.....
Clothing, including waterproofed	6,395	.....	45,773	.....
Hose	3,340	.....	102,116	.....
Tires, bicycle	65	.....	5,409	.....
Pneumatic	289,654	.....	4,696,432	.....
Inner tubes	25,615	.....	443,328	.....
Solid	317	.....	7,445	.....
Other rubber manufactures	68,062	$4,081	1,846,968	$44,579
Totals	$611,286	$4.081	$11,020,362	$44,579
Totals, rubber exports	$614,229	$4,081	$11,062,668	$44,579

World Rubber Absorption—Net Imports

	Long Tons—1932		
CONSUMPTION	Feb.	Mar.	Apr.
United States	30,110	27,919	26,038
United Kingdom	5,226	4,556	8,458
NET IMPORTS			
Australia	758	1,211	1,549
Austria	59	188	62
Belgium	506	721	.....
Canada	1,723	2,588	1,600
Czechoslovakia	306	644	.....
Denmark	42	98	68
Finland	36	11	36
France	2,898	2,482	2,956
Germany	4,256	3,436	3,737
Italy	1,189	1,423	1,083
Japan	6,781	5,398	3,684
Netherlands	500	112	348
Norway	50	70	90
Russia	2,931	2,745	.....
Spain	313	359	417
Sweden	580	277	280
Switzerland	50	38	49
Others	*800	*800	*800
Totals	59,114	55,076	.....
Minus United States (Cons.)	30,110	27,919	26,038
Total foreign	29,004	27,157	.....

* Estimate to complete table.

Compiled by Rubber Division, Department of Commerce, Washington, D. C.

CLASSIFIED ADVERTISEMENTS

SITUATIONS WANTED

YOUNG MAN, TWENTY-SEVEN, ASSISTANT SUPERINTENDENT **or junior executive, six years' experience** production, factory development and research with large corporations, tires, tubes, sundries, packings, brake linings. Knowledge compounding. Moderate salary. Fine record and references. Address Box No. 12,066, care of INDIA RUBBER WORLD.

CHEMIST, AGE FORTY-TWO, SINGLE, 14 YEARS' EXPERIENCE. Laboratory and factory work on tires, insulation, and reclaiming. Wide variety of non-rubber chemical experience. Address Box No. 12,067, care of INDIA RUBBER WORLD.

COST ACCOUNTANT, AGE 31, 10 YEARS' EXPERIENCE IN United States and Europe specializing in efficiency through budgetary control. Fine record and references. Especially capable of promoting efficient cooperation. Cheerful worker and will go anywhere for reliable firm. Address Box No. 12,070, care of INDIA RUBBER WORLD.

FACTORY MANAGER AND DEVELOPMENT MAN, EXPERIENCED in both soft and hard rubber mechanicals, calenders, mills, and presses. Knowledge of compounding. Reputed excellent handler of men. Address Box No. 12,072, care of INDIA RUBBER WORLD.

ORGANIC CHEMIST. RUBBER TECHNOLOGIST experienced in departmental organization and management. Versatile. Age 30. Married. Desires connection with growing concern. Opportunity of first consideration. Address Box No. 12,074, care of INDIA RUBBER WORLD.

MAN, FULLY EXPERIENCED IN DEVELOPMENT AND PRODUCtion of all kinds of molded, mandrel, and compression type tubes, wants a permanent job. Will travel anywhere. Reduced production costs assured. Address Box No. 12,077, care of INDIA RUBBER WORLD.

SALES REPRESENTATION BY TECHNICAL SALES ENGINEER experienced and acquainted in all branches of the rubber and paint industry. Present sales contacts are active and intimate with operating department heads as well as the officers. Akron and Northern Ohio district. Address Box No. 12,078, care of INDIA RUBBER WORLD.

SITUATIONS WANTED—Continued

CHEMIST AND SUPERINTENDENT, NOW EMPLOYED, DESIRES to connect with small concern wishing to increase their output. Highly experienced in the development and production of all classes of molded goods, sponge rubber, and extruded products. Interested only in a permanent connection. Address Box No. 12,080, care of INDIA RUBBER WORLD.

CHEMIST AGE THIRTY-SIX, MARRIED, UNIVERSITY graduate, desires permanent position. Good technical training, 11 years' experience in alkalis, acids, heavy chemicals, organic accelerators and analyses, rubber and rubber reclaiming manufacture. Available immediately. Moderate salary. Address Box No. 12,081, care of INDIA RUBBER WORLD.

SITUATIONS OPEN

WANTED: EXPERIENCED SHIFT FOREMAN CAPABLE OF handling production factory producing hard rubber battery parts. Pacific Coast. Knowledge of compounding not essential but must be satisfactory handler of men. Address Box No. 12,071, care of INDIA RUBBER WORLD.

CALIFORNIA CONCERN IS LOOKING FOR EXPERIENCED superintendent and foreman for the manufacture of hard rubber battery boxes. Furnish full references. Address Box No. 12,079, care of INDIA RUBBER WORLD.

BUSINESS OPPORTUNITIES

WE BUY AND SELL RAW AND SCRAP RUBBER. CORRESPONDence solicited. Chautard & Co., Ltd., 15-16 America-square, London, E. C. 3, England.

ESTABLISHED SELLING ORGANIZATION WITH LARGE WAREhouse in Cincinnati wants line of specialties suitable for department store and hardware trade. Address Box No. 12,073, care of INDIA RUBBER WORLD.

FOR SALE OR LEASE: 15,000-FOOT SPACE EQUIPPED COMpletely for the manufacture of molded products. Low power costs. Laboratory apparatus. Rent may be applied toward purchase of additional equipment as required by tenant. Address Box No. 12,076, care of INDIA RUBBER WORLD.

LISTEN WORLD!
Tire manufacturers, mail order corporations, wholesale tire retreaders and capitalists. Wire immediately for information on the newest marvel scientific puncture-proof pneumatic standard tire.
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Deresinated for all purposes. Wound golf ball cores and covers ready for assembling—also cover stock. Private brand golf balls to your order.
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sales to jobbers only
bumpers, slabs, sheet, strips, gaskets —in any quantities needed and desired qualities
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LOW PRICED GOLF BALL MOLDS
for the manufacture of
Solid Rubber Balls and the Regulation low grade Golf Ball
Interchangeable Printing Stamp | A new stamp for marking Golf Balls, made with hand cut hardened steel letters.
Inquiries will receive prompt attention
FRANCIS H. RICHARDS, INC.
9 to 15 Murray Street, N. Y. City

(Advertisements continued on page 97)

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
American Hard Rubber Co.	Pfd.	$2.00 q.	July 1	June 15
Boston Woven Hose & Rubber Co.	Pfd.	$3.00 s. a.	June 15	June 1
Dominion Rubber Co., Ltd.	Pfd.	$1.75 q.	June 30	June 21
Faultless Rubber Co.	Com.	$0.50 q.	July 1	June 15
Firestone Tire & Rubber Co.	Com.	$0.25 q.	July 20	July 5
Goodyear Textile Mills Co.	Pfd.	$1.75 q.	July 1	June 20
Goodyear Tire & Rubber Co. of Canada	Com.	$1.25 q.	July 2	June 15
Goodyear Tire & Rubber Co. of Canada	Pfd.	$1.75 q.	July 1	June 15
Pennsylvania Rubber Co.	6% 1st Pfd.	$1.50 q.	June 30	June 30
Stedman Rubber Flooring Co.	Pfd.	$1.75 q.	July 1	June 25
Tyer Rubber Co.	Com.	$0.25	May 16	May 12
Tyer Rubber Co.	6% Pfd.	$1.50 q.	May 16	May 12

Foreign Trade Circulars

Special circulars containing foreign rubber trade information are now being published by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C.

No.	Special Circulars
3274	Crude rubber reexports from United States, April, 1932.
3280	Japanese exports of tires, first quarter, 1932.
3281	Italian tire exports, January, 1932.
3282	German tire exports, March, 1932.
3284	Belgian tire exports, January and February, 1932.
3285	French tire exports, April, 1932.
3286	French footwear exports, April, 1932.

Plantation Rubber Crop Returns by Months

Summary of 615 Producing Companies

	Br. N. Borneo (26 Companies)		Ceylon (102 Companies)		India and Burma (21 Companies)		Malaya (338 Companies)		Netherlands East Indies — Java (60 Companies)		Netherlands East Indies — Sumatra (60 Companies)		Miscellaneous (8 Companies)		Total (615 Companies)	
1932	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index
January	352	72.0	1,378	67.5	208	37.0	14,409	115.9	2,791	106.3	4,712	116.9	212	117.1	24,062	107.6
February	336	68.7	738	36.2	82	14.6	11,854	95.3	2,793	106.4	3,894	96.6	120	66.3	19,817	88.6
March	359	73.4	1,168	57.2	171	30.4	11,403	91.7	3,088	117.6	4,213	104.5	143	79.0	20,545	91.9
April	325	66.5	1,268	62.1	181	32.2	11,921	95.9	2,770	105.5	4,055	100.6	162	89.5	20,682	92.5
Four months ending April, 1932	1,372	....	4,552	....	642	....	49,587	....	11,442	....	16,874	....	637	....	85,106	....
1931	1,567	....	5,678	....	1,739	....	46,430	....	11,894	....	15,944	....	745	....	83,997	....

Note. Index figures throughout are based on the monthly average for 1929=100. Issued May 24, 1932, by the Commercial Research Department, The Rubber Growers' Association, Inc., London, England.

Rubber Goods Production Statistics

	1932	1931									1932		
Tires and Tubes	Apr.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Pneumatic casings													
Production ....thousands	....	3,955	4,543	4,538	3,941	3,125	2,538	2,379	2,901	2,115	2,770	3,097	2,937
Shipments, total ....thousands	....	3,946	4,332	4,458	4,370	3,968	3,145	2,281	2,310	2,225	2,602	2,042	2,363
Domestic ....thousands	....	3,804	4,197	4,320	4,244	3,845	3,034	2,185	2,223	2,171	2,545	1,973	2,281
Stocks, end of month....thousands	....	8,025	8,250	8,358	7,936	7,117	6,527	6,640	6,335	6,220	6,329	7,338	7,902
Solid and cushion tires													
Production ....thousands	....	12	11	12	13	12	10	11	9	10	9	10	9
Shipments, total ....thousands	....	15	16	15	16	16	13	14	10	11	9	10	9
Domestic ....thousands	....	14	14	14	15	15	12	13	10	10	9	9	9
Stocks, end of month....thousands	....	64	61	57	55	51	46	43	42	39	37	37	37
Inner tubes													
Production ....thousands	....	3,693	4,330	4,286	3,964	3,548	2,759	2,462	1,955	2,078	2,719	3,057	2,802
Shipments, total ....thousands	....	3,709	4,225	4,318	4,665	4,240	3,320	2,250	2,076	2,213	2,803	2,182	2,149
Domestic ....thousands	....	3,610	4,135	4,228	4,569	4,158	3,247	2,187	2,022	2,172	2,761	2,135	2,094
Stocks, end of month....thousands	....	8,330	8,439	8,403	7,672	7,019	6,476	6,657	6,496	6,338	6,175	7,008	7,558
Raw material consumed													
Fabrics ....thous. of lbs.	....	15,244	18,010	17,085	15,140	11,745	9,585	9,263	8,361	7,981	12,156	12,518	11,292
Miscellaneous Products													
Rubber bands, shipments....thous. of lbs.	....	259	215	209	246	195	201	225	197	231	206	208	223
Rubber clothing, calendered													
Orders, net ....no. coats and sundries	....	16,846	19,380	21,161	17,932	21,580	23,966	20,925	14,341	13,654	20,720	12,388	14,970
Production ....no. coats and sundries	....	16,803	18,094	15,419	14,431	27,080	22,728	19,773	23,255	16,221	10,130	20,405	17,649
Rubber-proofed fabrics, production, total, thous. of yds.	....	3,021	3,050	3,212	3,337	3,787	4,692	4,112	2,529	2,074	2,184	2,448	2,463
Auto fabrics ....thous. of yds.	....	710	982	701	531	596	528	445	394	380	339	233	312
Raincoat fabrics ....thous. of yds.	701	1,040	1,066	1,355	1,843	2,226	2,988	2,476	1,267	931	853	883	754
Rubber flooring, shipments....thous. of sq. ft.	....	569	569	576	577	595	595	550	462	587	358	376	422
Rubber and canvas footwear													
Production, total ....thous. of pairs	4,104	3,693	3,402	3,921	2,407	3,382	3,934	4,363	4,217	4,469	3,557	3,777	4,787
Tennis ....thous. of pairs	3,446	2,591	2,142	1,999	836	1,021	1,012	1,231	1,443	2,078	2,496	3,226	4,187
Waterproof ....thous. of pairs	657	1,102	1,261	1,922	1,570	2,361	2,922	3,131	2,773	2,391	1,061	552	600
Shipments, total ....thous. of pairs	5,073	5,341	4,113	4,094	3,272	4,245	5,706	5,104	3,720	4,208	3,990	4,454	4,998
Tennis ....thous. of pairs	4,374	4,199	3,437	2,757	1,645	1,252	1,335	633	475	734	2,374	3,411	4,264
Waterproof ....thous. of pairs	698	1,142	676	1,337	1,627	2,993	4,371	4,471	3,245	3,474	1,616	1,043	735
Shipments, domestic, total....thous. of pairs	5,010	5,119	3,942	3,886	3,030	4,065	5,448	4,907	3,632	4,054	3,962	4,416	4,943
Tennis ....thous. of pairs	4,333	4,049	3,316	2,657	1,520	1,223	1,263	589	446	616	2,353	3,378	4,216
Waterproof ....thous. of pairs	677	1,070	626	1,229	1,510	2,842	4,185	4,318	3,186	3,438	1,610	1,038	727
Stocks, total, end of month....thous. of pairs	18,381	24,566	23,881	23,789	22,935	22,070	20,615	19,880	20,367	20,628	20,237	19,551	19,347
Tennis ....thous. of pairs	7,267	8,833	7,523	6,766	5,957	5,704	5,473	6,076	7,044	8,387	8,510	8,264	8,191
Waterproof ....thous. of pairs	11,115	15,733	16,357	17,024	16,978	16,366	15,141	13,804	13,323	12,241	11,726	11,287	11,156
Rubber heels													
Production ....thous. of pairs	....	15,408	15,474	17,093	15,361	16,293	15,827	14,567	11,455	14,138	12,316	14,787	16,368
Shipments													
Export ....thous. of pairs	....	578	612	630	540	514	501	617	591	474	290	259	305
Repair trade ....thous. of pairs	....	4,038	3,975	4,946	4,058	5,355	6,994	5,924	4,537	4,622	3,431	4,575	3,785
Shoe manufacturers ....thous. of pairs	....	10,112	9,693	10,522	11,177	11,653	9,724	7,484	6,610	8,198	8,704	8,748	9,424
Stocks, end of month....thous. of pairs	....	27,764	28,491	27,898	27,006	25,832	23,952	24,652	25,213	24,405	24,515	25,807	27,933
Rubber soles													
Production ....thous. of pairs	....	2,692	2,885	3,177	2,864	2,933	2,880	2,610	2,840	3,639	3,411	3,461	3,953
Shipments													
Export ....thous. of pairs	....	69	62	59	67	67	90	45	29	25	8	3	2
Repair trade ....thous. of pairs	....	255	330	225	196	234	290	370	308	267	264	285	252
Shoe manufacturers ....thous. of pairs	....	2,474	2,651	2,899	2,569	2,790	2,604	2,273	2,579	3,196	2,954	2,925	3,320
Stocks, end of month....thous. of pairs	....	2,764	2,655	2,461	2,475	2,395	2,264	2,153	2,180	2,018	2,085	2,428	2,691
Mechanical rubber goods, shipments													
Total ....thous. of dollars	....	4,617	4,231	3,879	3,706	3,356	3,015	2,678	2,300	2,381	2,463	2,446	2,638
Belting ....thous. of dollars	....	832	790	798	914	802	788	601	483	474	483	483	491
Hose ....thous. of dollars	....	2,129	1,857	1,650	1,436	1,161	1,041	972	856	919	903	966	1,174
Other ....thous. of dollars	....	1,656	1,584	1,431	1,356	1,393	1,186	1,105	961	988	1,077	997	973

Source: *Survey of Current Business*, Bureau of Foreign and Domestic Commerce, Washington, D. C.

Classified Advertisements

CONTINUED

MACHINERY AND SUPPLIES WANTED

WANTED: USED LATEST DESIGN NO. 11 BANBURY MIXERS. State price, present condition, age, and location. Address Box No. 12,068, care of INDIA RUBBER WORLD.

WANTED: HYDRAULIC PLATEN PRESS, MINIMUM SIZE 4' by 12', three 6" openings preferred. For operation on 2,000-lb. hydraulic. Must have 1,000 lbs. sq. in. platen pressure. State price, present condition, age, and location. Address Box No. 12,069, care of INDIA RUBBER WORLD.

Good Second-Hand Press for Rubber Belting and Tiling

Hydraulic press for rubber belting and tiling, second-hand but good, required at once by Scandinavian factory. Address Box No. 12,075, care of INDIA RUBBER WORLD.

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FOR SALE: BOUND VOLUMES OF INDIA RUBBER WORLD, for the years 1905, 1906, 1907, 1908, 1909, 1910, and the year 1919. Address Box No. 12,041, care of INDIA RUBBER WORLD.

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STRAINERS—6", 8", 10" Allen, Adamson, etc.
HYDRAULIC PRESSES—14"x14" (Ten Platens), 24"x24", 30"x30", 36"x36", 34"x34" (Seven Platens), 40"x40", 44"x44", 48"x48", etc.
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